Nederman

5865 McLaughlin Rd.
Mississauga, Ontario L5R 1B8

**The following is a summary and pricing of the potential unit being purchased:**

## Design Parameters

| | | | |
|---|---|---|---|
| Air volume | **5,100 ACFM** | # of bags in unit | **50** |
| Filter area | **900 ft2** | Volume collected per unit time | **4 ft3 / day** |
| Air to Cloth Ratio | **5.67** | Expected collector usage | **8 hrs / day** |

## Equipment Pricing

| | |
|---|---|
| Model | NFPZ 2HE Filter Unit with (4) 42 Gallon Barrels |
| Quantity | 1 |
| System pressure | Negative |
| System voltage | 575V |
| Integral fan | (1) NFPZ Top Mount Fan - FM 831 - 20HP - 575V |
| Integral fan starter or VFD | VFD(s) - (1) 20 HP |
| Integral fan silencer | FM 800 Silencer w/ Flange (for return air) (1) |
| Shaker motor cleaning control | Automatic - stop for cleaning every 4 hours |
| Unit catwalk / gangway | No catwalk / gangway / by others |
| Doors | Doors w/ locks & explosion panels on top of unit |
| Sprinkler pipe | Included |

**Note:** Throughout the sales process and installation, the collector location and orientation may change to maintain a safe zone as a precaution for possible explosive events (if applicable) to meet local codes and regulations set by the authority having jurisdiction.
**Note:** The collector is designed for hsandling light dust loads and generally collecting less than 50 gallons of dust per 8-hour operation.

## Explosion Isolation Flap Valve

| | | |
|---|---|---|
| **Zone 1 EIFV** | 16'' / 400 mm, Flanged, Up to and including ST1 | Included |

## Additional Equipment

| | |
|---|---|
| Spark Detection and Extinguishing System | Included |
| Abort Damper 18in | Included |
| agnehelic Gauge Kit | Included |
| Wind Cross Bracing | Included |
| or 42 Gallon Drums | Included |

REVIEWED ■ REVIEWED AS NOTED ☐
REVISE & RESUBMIT ☐ REJECTED ☐
THE INTENTION OF THIS REVIEW IS TO ASCERTAIN CONFORMANCE WITH THE GENERAL DESIGN CONCEPT. IT DOES NOT RELIEVE THE CONTRACTOR AND MANUFACTURER OF RESPONSIBILITY FOR DIMENSIONAL ACCURACY, OMISSIONS, ERRORS AND COMPLIANCE WITH THE CONTRACT DRAWINGS AND DOCUMENTS.
BY _____ DATE Mar.9/26.
COPA ENGINEERING LTD.

ROOT3 ENGINEERING LTD
THIS DOCUMENT HAS BEEN REVIEWED BY ROOT3 ENGINEERING LTD FOR GENERAL CONFORMANCE AND DESIGN INTENT. THIS DOES NOT RELEASE THE CONTRACTOR OF RESPONSIBILITY FOR CONFORMANCE WITH THE DESIGN DRAWINGS AND SPECIFICATIONS.
REVIEWED ☒
DATE: Mar 23, 2026
BY: S.H.

ROOT3: REVIEWED FOR ELECTRICAL POWER ONLY.

GS | GACESA SLOTE ARCHITECTS

Reviewed ☐
Reviewed as noted ☒

Revise and resubmit ☐
Not reviewed ☐

Date: 03/23/2026
Reviewed by: gacesa

This review by GS | Gacesa Slote Architects is for the sole purpose of ascertaining conformance with the general design concept for architectural features only and does not in any way constitute review of the deign of engineering elements which form part of the contract documents prepared by others. This review shall not mean that GS | Gacesa Slote Architects approves the detailed design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of his responsibility for errors, or omissions in the shop drawings or of the responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of constriction and installation and for coordination of the work of all trades.

**DUST & MEDIA SPECIFICATIONS**
DUST TYPE: WOOD
FILTER MEDIA: SUPERBAG XT5
ANTI-STATIC POLYESTER
FILTER EFFICIENCY @ 3 MICRON: 99%

# NFPZ3000-2HE

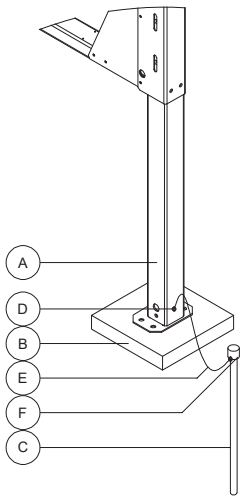
## VOLTAGE: 575 VAC

**SYSTEM SPECIFICATIONS**
50 BAGS WITH TOTAL FILTER AREA: 900 SQ. FT.
AIR TO CLOTH RATIO @ DESIGN FLOW: 5.67:1
DESIGN AIRFLOW & PRESSURE: 5100 CFM @ 16" w.c.
UNPLUGGED FILTER WEIGHT: 2400 LBS
COMBUSTIBLE DUST RATING: Kst ≤ 200, Pmax ≤ 9bar

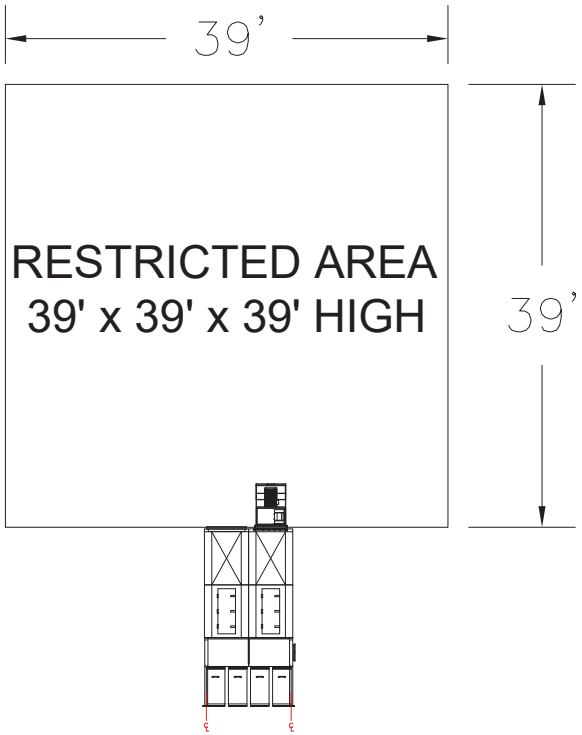
*1010000207.11*

## COLLECTOR GROUNDING

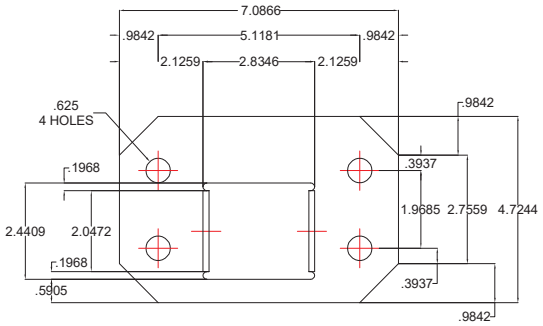
A. STEEL SUPPORT FOR FILTER
B. FOUNDATION
C. GROUNDING ROD - COPPER. MIN. DIAMETER: 1/2". MIN. LENGTH 8FT.
D. CONNECTION 3/8" BOLT & NUT + CABLE LUG
E. CABLE CONNECTION. SIZE 10 - 3 AWG, HOWEVER, AT LEAST 50% OF LARGEST CONDUCTOR CONNECTED TO THE SYSTEM, BUT MAX. 3 AWG.
F. CONNECTION BOX FOR EARTHING ROD.



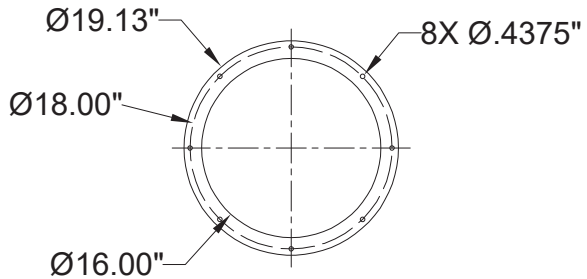

## RESTRICTED AREA DETAIL




## COLLECTOR FOOTPLATE DETAIL




## INLET FLANGE DETAIL




**GENERAL NOTES**

- THE COLLECTOR AND ROTARY AIR LOCK MUST BE EARTH GROUNDED TO DISSIPATE ANY BUILDUP OF STATIC ELECTRICITY. POWER DIST. PANELS, FEEDERS, AND INDIVIDUAL POWER CIRCUITS TO NEDERMAN MOTOR STARTER TO BE FURNISHED BY CUSTOMER.
- IT IS THE RESPONSIBILITY OF THE CUSTOMER TO ENSURE THAT ALL ADDITIONAL WIRING MEETS N.E.C. AND ALL LOCAL CODES.
- DETERMINATION OF CONCRETE FOOTINGS, PADS, ETC. SIZE, DEPTH, AND MASS TO BE THE RESPONSIBILITY OF THE CUSTOMER BASED ON LOCAL CODES AND INFORMATION SUPPLIED ON THIS DRAWING.
- CONCRETE PAD SHOULD BE SLOPED NO MORE THAN 1/16" OVER 12". ANCHORS FOR FILTER SYSTEM SHOULD NOT BE MADE UNTIL AFTER THE FILTER IS SET AND HOLES MARKED.
- IT IS THE RESPONSIBILITY OF THE CUSTOMER TO PROVIDE PLUMBING AND SPRINKLER FOR FILTER SYSTEM IF REQUIRED.
- DUCTWORK INSTALLATION SHOULD BE PERFORMED TO NEDERMAN DUCTWORK INSTALLATION GUIDELINES
- ANY DEVIATION FROM THE ENGINEERED LAYOUT MAY AFFECT THE PERFORMANCE OF THE DUST COLLECTION SYSTEM. IF YOU MUST DEVIATE FROM THE LAYOUT AS DESIGNED, CONTACT NEDERMAN FOR ENGINEERING APPROVAL.

**INCLUDED OPTIONS**

- CARZ EXPLOSION ISOLATION DAMPER(S).
- SPARK DETECTION
- HANSENTEK SYSTEM.
- VARIABLE FREQUENCY DRIVE(S).

**EXPLOSION ISOLATION**

- CARZ DAMPER MUST BE INSTALLED MINIMUM 18FT MAXIMUM 32FT FROM COLLECTOR INLET.
- NO MORE THAN (2) 90° ELBOWS.

**HANSENTEK SYSTEM**

- THE EXTINGUISHER MUST BE LOCATED A MIN OF 20' FROM THE DETECTORS AND A MIN OF 5' FROM ANY TRANSITION, ELBOW OR BRANCH.
- THE DETECTORS MUST BE INSTALLED 2.5 DUCT DIAMETERS FROM ANY TRANSITION, ELBOW OR BRANCH.

**PROJECT SPECIFIC NOTES:**

APPROVED FOR CONSTRUCTION
BY:_____
DATE:_____
WITH CORRECTIONS/CHANGES AS NOTED

Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 855-925-1609
FAX: +1 905-366-2206



| | NAME | DATE | Rev: | Scale: |
|---|---|---|---|---|
| DRAWN: | C. SCIDA | 26-Jan-26 | B | |
| CHECKED: | | | Sheet #: 1 of 4 | Size: A |

Title: SIR ALLAN MACNAB GENERAL ARRANGEMENT

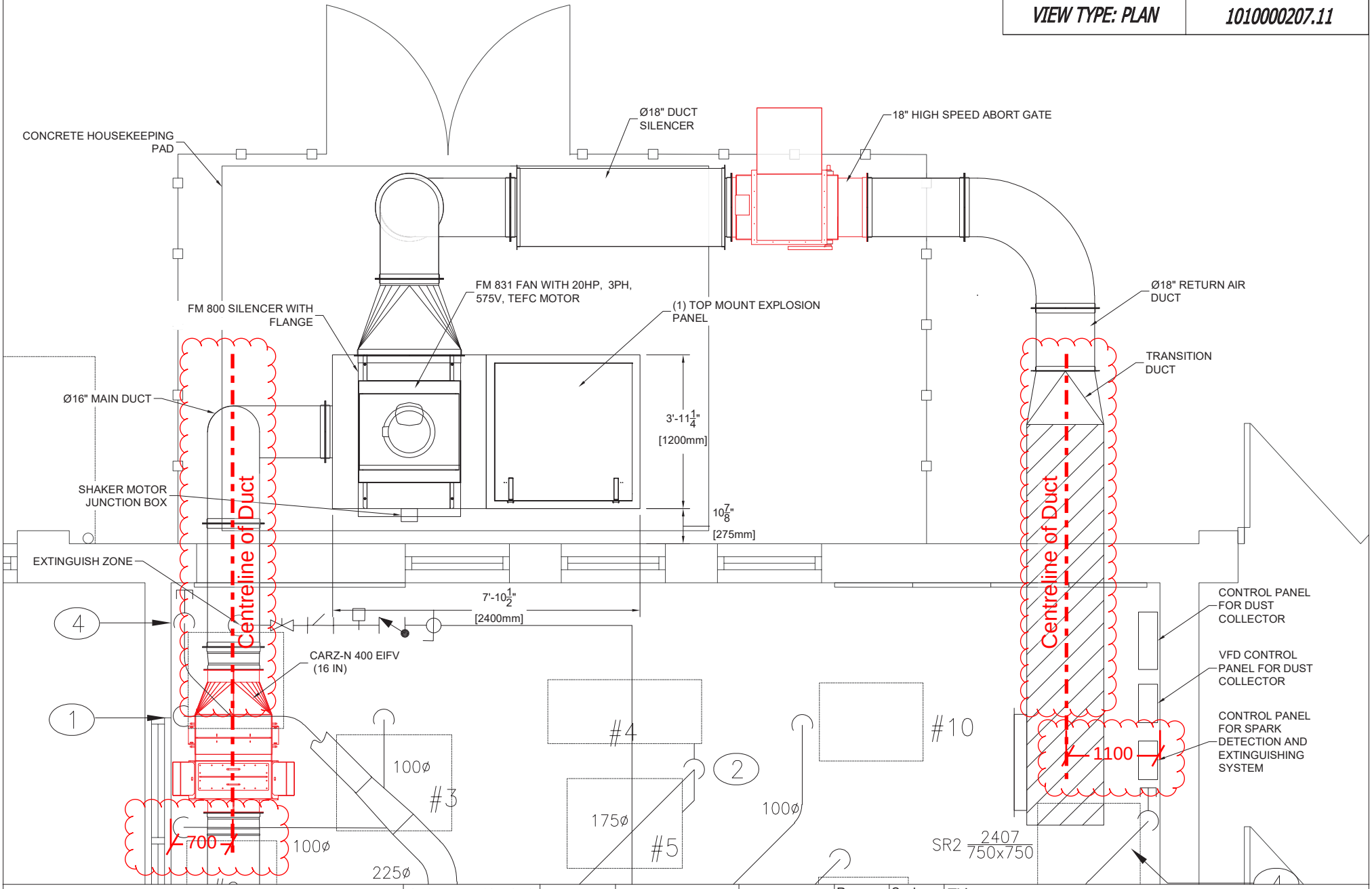
**DUST & MEDIA SPECIFICATIONS**
DUST TYPE: WOOD
FILTER MEDIA: SUPERBAG XT5
ANTI-STATIC POLYESTER
FILTER EFFICIENCY @ 3 MICRON: 99%

# NFPZ3000-2HE

## VOLTAGE: 575 VAC

**SYSTEM SPECIFICATIONS**
50 BAGS WITH TOTAL FILTER AREA: 900 SQ. FT.
AIR TO CLOTH RATIO @ DESIGN FLOW: 5.67:1
DESIGN AIRFLOW & PRESSURE: 5100 CFM @ 16" w.c.
UNPLUGGED FILTER WEIGHT: 2400 LBS
COMBUSTIBLE DUST RATING: Kst ≤ 200, Pmax ≤ 9bar

*VIEW TYPE: PLAN* | *1010000207.11*





Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 855-925-1609
FAX: +1 905-366-2206




| | NAME | DATE | Rev: | Scale: |
|---|---|---|---|---|
| DRAWN: | C. SCIDA | 26-Jan-26 | B | 1:40 |
| CHECKED: | | | Sheet #: 2 of 4 | Size: A |

Title: SIR ALLAN MACNAB GENERAL ARRANGEMENT

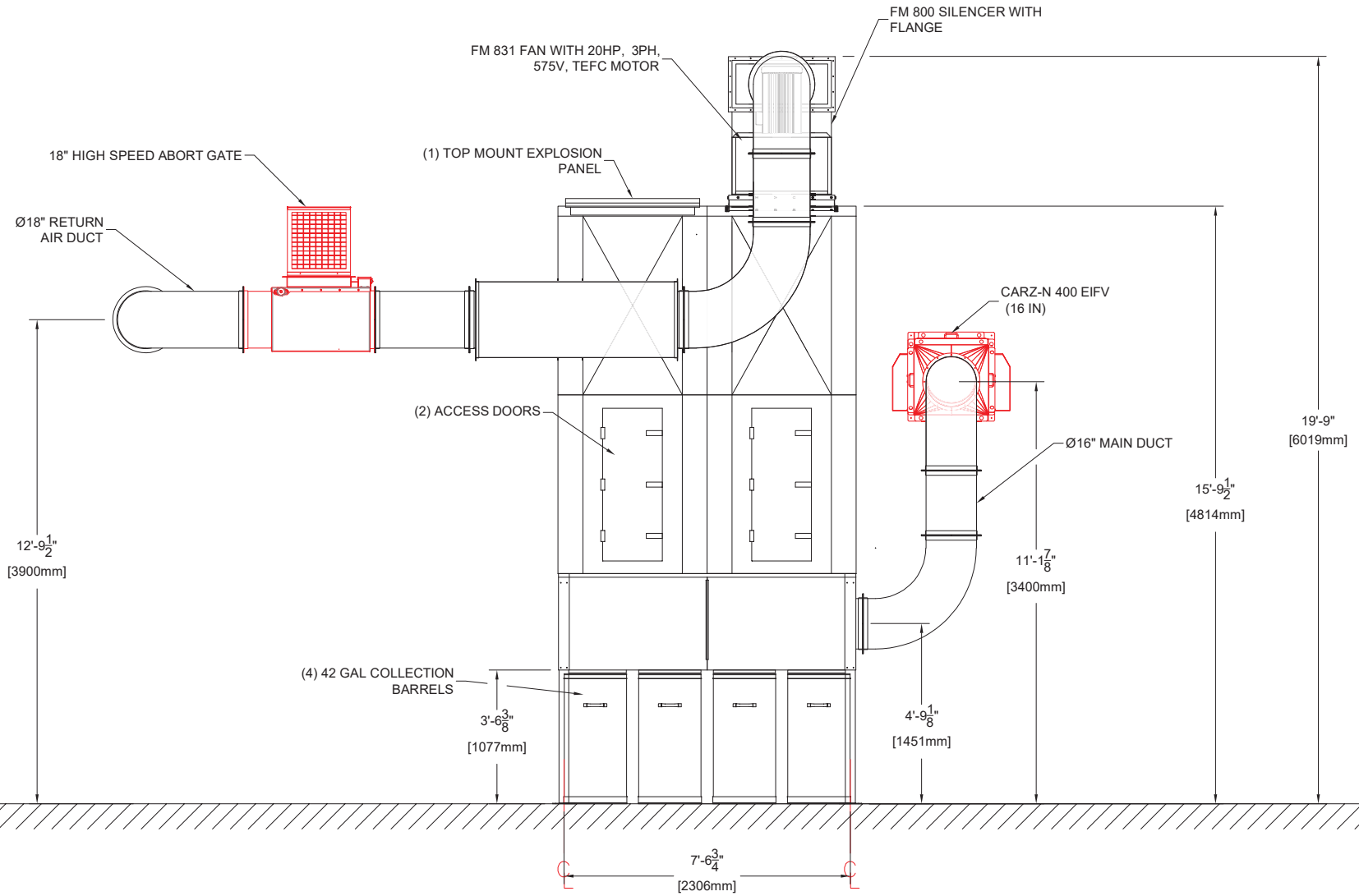
**DUST & MEDIA SPECIFICATIONS**
DUST TYPE: WOOD
FILTER MEDIA: SUPERBAG XT5
ANTI-STATIC POLYESTER
FILTER EFFICIENCY @ 3 MICRON: 99%

# NFPZ3000-2HE

## VOLTAGE: 575 VAC

**SYSTEM SPECIFICATIONS**
50 BAGS WITH TOTAL FILTER AREA: 900 SQ. FT.
AIR TO CLOTH RATIO @ DESIGN FLOW: 5.67:1
DESIGN AIRFLOW & PRESSURE: 5100 CFM @ 16" w.c.
UNPLUGGED FILTER WEIGHT: 2400 LBS
COMBUSTIBLE DUST RATING: Kst ≤ 200, Pmax ≤ 9bar

*VIEW TYPE: ELEVATION* | *1010000207.11*





Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 855-925-1609
FAX: +1 905-366-2206




| | NAME | DATE | Rev: | Scale: |
|---|---|---|---|---|
| DRAWN: | C. SCIDA | 26-Jan-26 | B | 1:50 |
| CHECKED: | | | Sheet #: 3 of 4 | Size: A |

Title: SIR ALLAN MACNAB GENERAL ARRANGEMENT

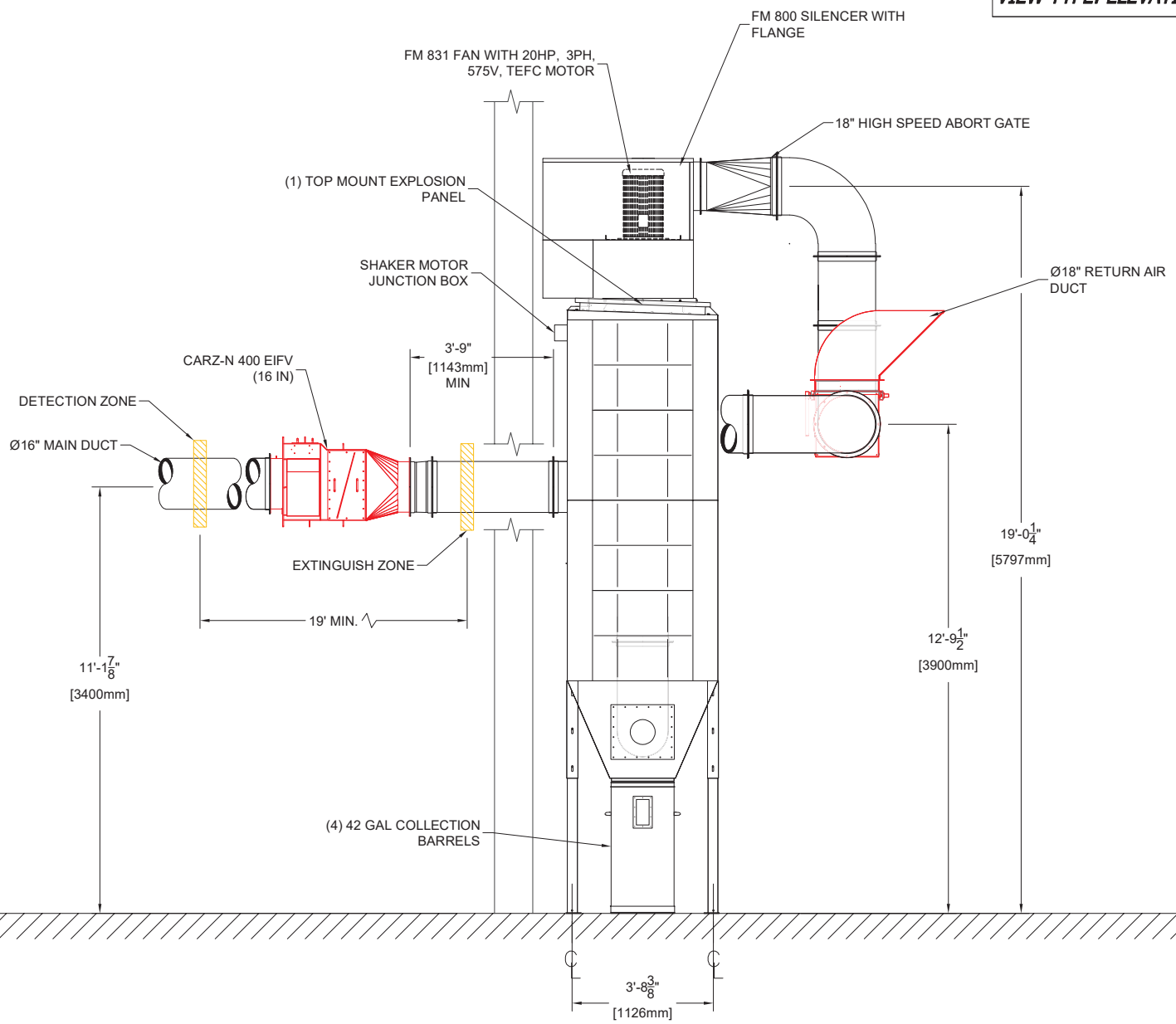
**DUST & MEDIA SPECIFICATIONS**
DUST TYPE: WOOD
FILTER MEDIA: SUPERBAG XT5
ANTI-STATIC POLYESTER
FILTER EFFICIENCY @ 3 MICRON: 99%

# NFPZ3000-2HE

## VOLTAGE: 575 VAC

**SYSTEM SPECIFICATIONS**
50 BAGS WITH TOTAL FILTER AREA: 900 SQ. FT.
AIR TO CLOTH RATIO @ DESIGN FLOW: 5.67:1
DESIGN AIRFLOW & PRESSURE: 5100 CFM @ 16" w.c.
UNPLUGGED FILTER WEIGHT: 2400 LBS
COMBUSTIBLE DUST RATING: Kst ≤ 200, Pmax ≤ 9bar

**VIEW TYPE: ELEVATION** | **1010000207.11**





Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 855-925-1609
FAX: +1 905-366-2206




| | NAME | DATE |
|---|---|---|
| DRAWN: | C. SCIDA | 26-Jan-26 |
| CHECKED: | | |

Rev: B | Scale: 1:50 | Sheet #: 4 of 4 | Size: A

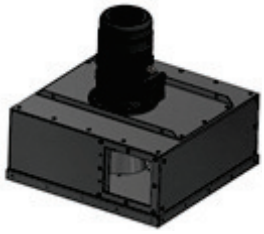
Title: SIR ALLAN MACNAB GENERAL ARRANGEMENT

Nederman

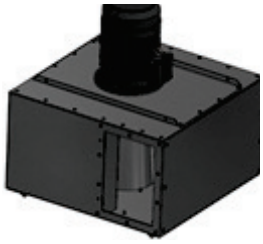
# FM Fan and FMZ fan with ATEX declaration

## High-efficiency fan for the M-series filter range

**FM6XX**



**FM8XX**



### Description

The FM fan range is designed exclusively for direct mounting to the clean air chamber of the MCP and MEP filter units. They are designed for high efficiency with low noise levels and are of the non-over-loading type. This gives a safe and reliable system with minimal power consumption when under reduced loads. The fans are only available in RD version.

The FMZ fan is designed to handle combustible dusts. It is equipped with an inspection door.

### Product marking of FMZ fan

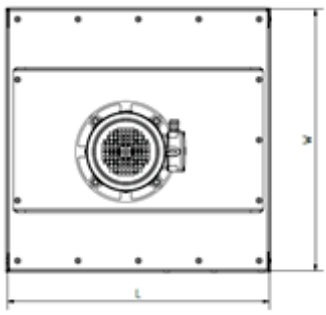
For installation in non-zone:

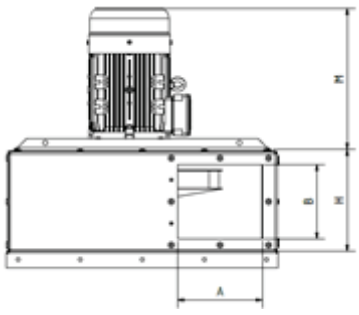
CE Ex II 3D/- c Ex h IIIC 248°F Dc/-

For installation in Zone 22:

CE Ex II 3D/3D c Ex h IIIB 248°F Dc/Dc

| Specification | Standard |
|---|---|
| Fan, material | Galv. steel, 14 GA |
| Motor, manufacturer | Standard |
| Motor, electrical supply | 3x230/460 VAC/60Hz<br>3x575 VAC/60 Hz |
| Motor and fan speed | 3550 RPM |
| Outlet | Dia. 6 to 24 inches |

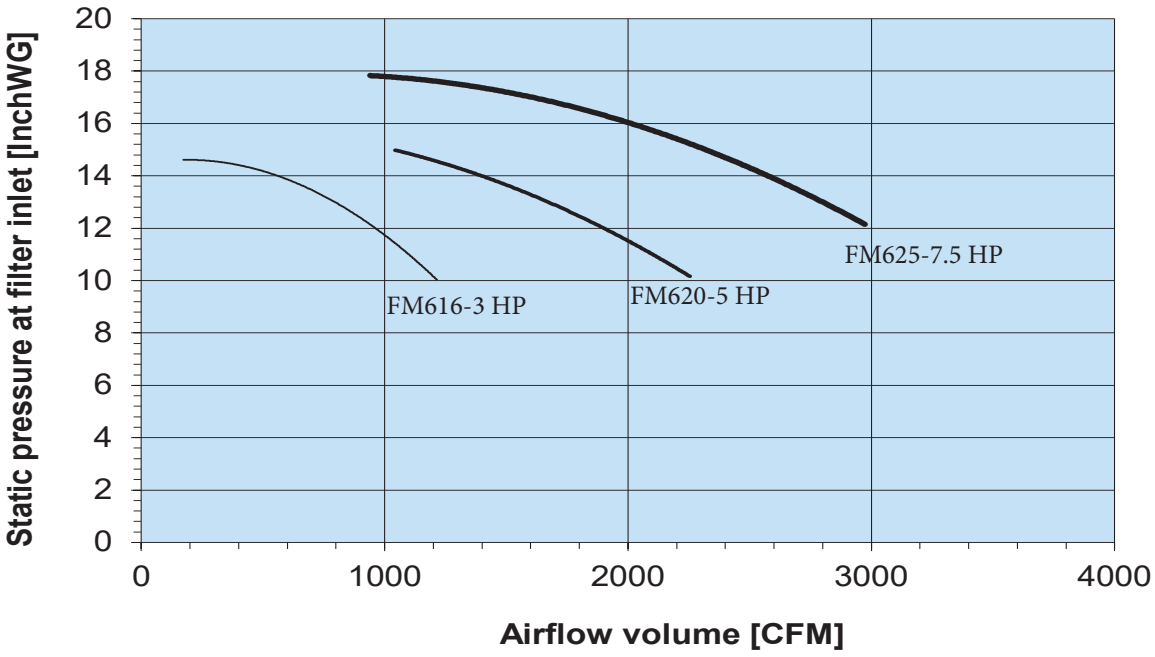




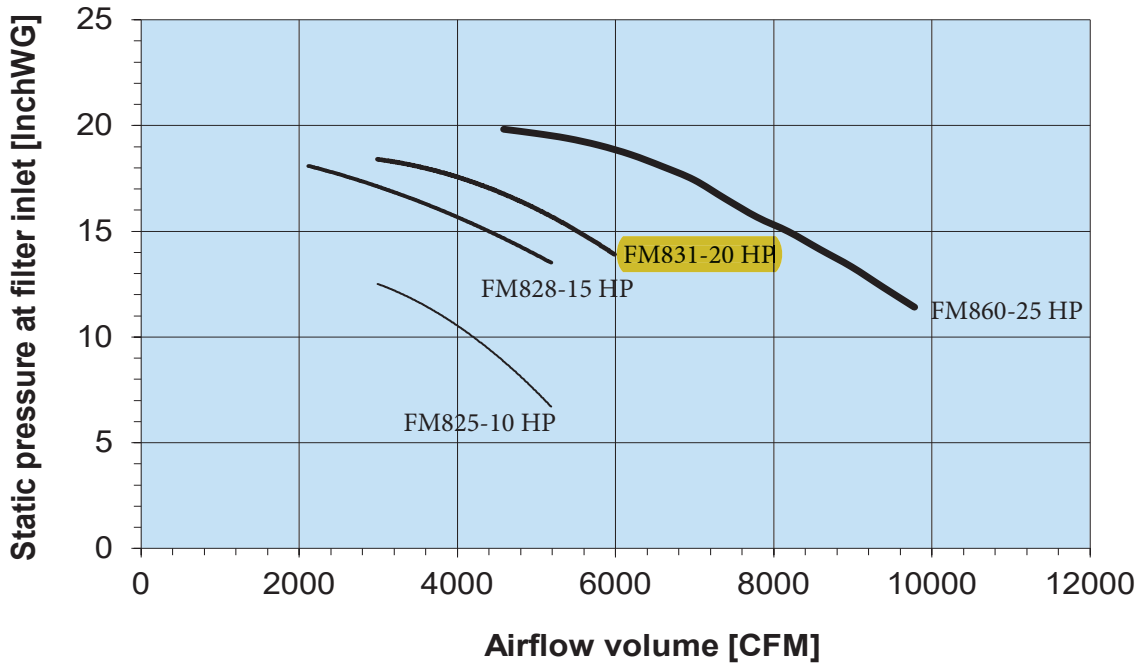
**FMZ8XX** - fan with inspection

| Type | Motor size [HP] | Weight [Lbs] | Optimum duty point [CFM] | Noise level (dB(A-)/1m)[1] | Max. RPM | Efficiency (%) | Max. recomm. air flow [CFM] | Dimensions [inches] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | L | W | H | M | A | B |
| FM616 | 3 | 170 | 1100 | 67 | 3550 | 82 | 1350 | 25.60 | 25.60 | 9.65 | 13.80 | 8.10 | 7.10 |
| FM620 | 5 | 185 | 2000 | 71 | 3550 | 82 | 2560 | 25.60 | 25.60 | 9.65 | 13.80 | 8.10 | 7.10 |
| FM625 | 7.5 | 215 | 3400 | 69 | 3550 | 82 | 3980 | 25.60 | 25.60 | 9.65 | 13.80 | 8.10 | 7.10 |
| FM825 | 10 | 340 | 4800 | 74 | 3550 | 80 | 5590 | 31.50 | 31.50 | 18.30 | 19.90 | 10.30 | 14.95 |
| FM828 | 15 | 375 | 5400 | 75 | 3550 | 82 | 6350 | 31.50 | 31.50 | 18.30 | 19.90 | 10.30 | 14.95 |
| FM831 | 20 | 410 | 5500 | 76 | 3550 | 82 | 6700 | 31.50 | 31.50 | 18.30 | 19.90 | 10.30 | 14.95 |
| FM860 | 25 | 450 | 8600 | 78 | 3550 | 80 | 10960 | 31.50 | 31.50 | 18.30 | 19.90 | 10.30 | 14.95 |

## FM / FMZ FANS
## Includes all internal resistance except filter media




## FM / FMZ FANS
## Includes all internal resistance except filter media



## ***Nederman Variable Frequency Drive - VFD***

The Wall Mounted Drives come as a compact and comprehensive drive package, with all the necessary components integrated into a single unit. They are supplied in Type **NEMA 12** enclosures for the power supply voltages specific to the application. **NEMA 12** enclosures are intended mainly for indoor industrial, manufacturing, and machining applications. These metal **enclosures** will protect against dust, dirt, and dripping non-corrosive liquids, oil and lubricants.

The drives are preprogrammed to the application and ready to be installed.


## *Insight ready*

If the control panel supplied with the application is an ***Insight control panel*** only a shielded two conductor wire between the drive and the panel is required to operate the drive and monitor and record critical parameters.

## *Installation*

The drive must be installed in accordance with National Electrical Code and local requirements.

The are no special requirements for clearance side to side, but top and bottom must be clear to allow the cooling air to freely enter and exit the drive. If the drive is place inside a cabinet proper cooling air flow must be provided in accordance with the direction in the manual for the drive.

## *Technical data*

Table for VFD data and the corresponding frame size. It is important that each VFD will only work in the voltage range specified.

Sizing of branch circuits and fuses must be done based on the Full Load Current (FLC) for the motor load.

| 525 – 600 VOLT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Part #** | **Motor Size [kW]** | **Motor Size [HP]** | **Continuous Current IL[A]** | **Frame size** | **H in.** | **W in.** | **D in.** | **Weight lbs.** |
| 89116296 | 2.2 | 3.0 | 3.9 | MR05 | 16.5 | 5.7 | 8.4 | 22 |
| 89116297 | 4 | 5.0 | 6.1 | | | | | |
| 89116298 | 5.5 | 7.5 | 9 | | | | | |
| 89116299 | 7.5 | 10.0 | 11 | | | | | |
| 89116300 | 11 | 15.0 | 18 | MR06 | 21.9 | 7.7 | 8.7 | 44 |
| 89116301 | 15 | 20.0 | 22 | | | | | |
| 89116302 | 18.5 | 25.0 | 27 | | | | | |
| 89116303 | 22 | 30.0 | 34 | | | | | |
| 89116304 | 30 | 40.0 | 41 | MR07 | 25.4 | 9.3 | 10.2 | 83 |
| 89116305 | 37 | 50.0 | 52 | | | | | |
| 89116306 | 45 | 60.0 | 62 | | | | | |
| 89116307 | 55 | 75.0 | 80 | MR08 | 38 | 11.4 | 13.5 | 145.5 |
| 89116308 | 75 | 100.0 | 100 | | | | | |
| 89116309 | 90 | 125.0 | 125 | | | | | |
| 89116310 | 110 | 150.0 | 144 | | | | | |

| Technical leaflet<br>150098 10 | Date<br>2016-03-21 |
|---|---|

# DUAL-Silencer for FM fans

## DUAL-silencer for enclosure of FM fan motor and the top of the fan case.

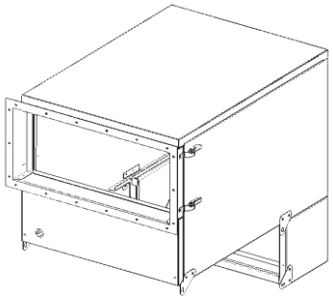
The DUAL-silencer encloses the fan motor and the top of the fan case. It may be fitted to any FM unit and take the place of a conventional in-line silencer, with the added benefit of reducing breakout noise from the fan.
The DUAL-silencer is available in three sizes, to fit FM600 series, FM800 series fan and the FM1000 fan.

### Description

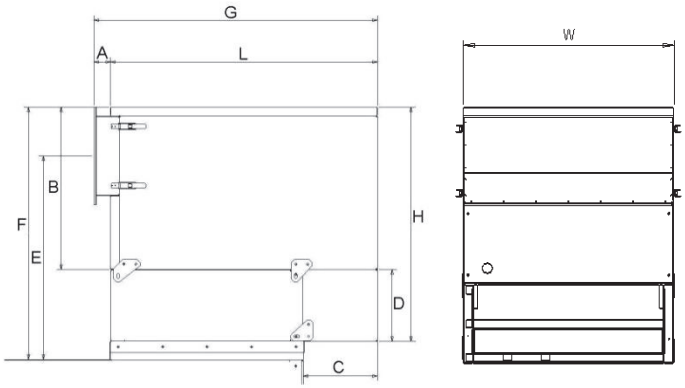
The DUAL-silencer is made of 2mm galvanized steel.
The grille may be fitted with a rain cover or replaced by a flanged outlet. These items are interchangeable and are clipped into place on the silencer.

| Type | Max. recommended air flow ($m^3/h$) | Typical noise level dB(A), at 1 m from unit, 1 m above floor level (with air grille) |
|---|---|---|
| FM800 fan series | 9,000 | 75 |

**DUAL-Silencer with flanged outlet (for external duct connection)**



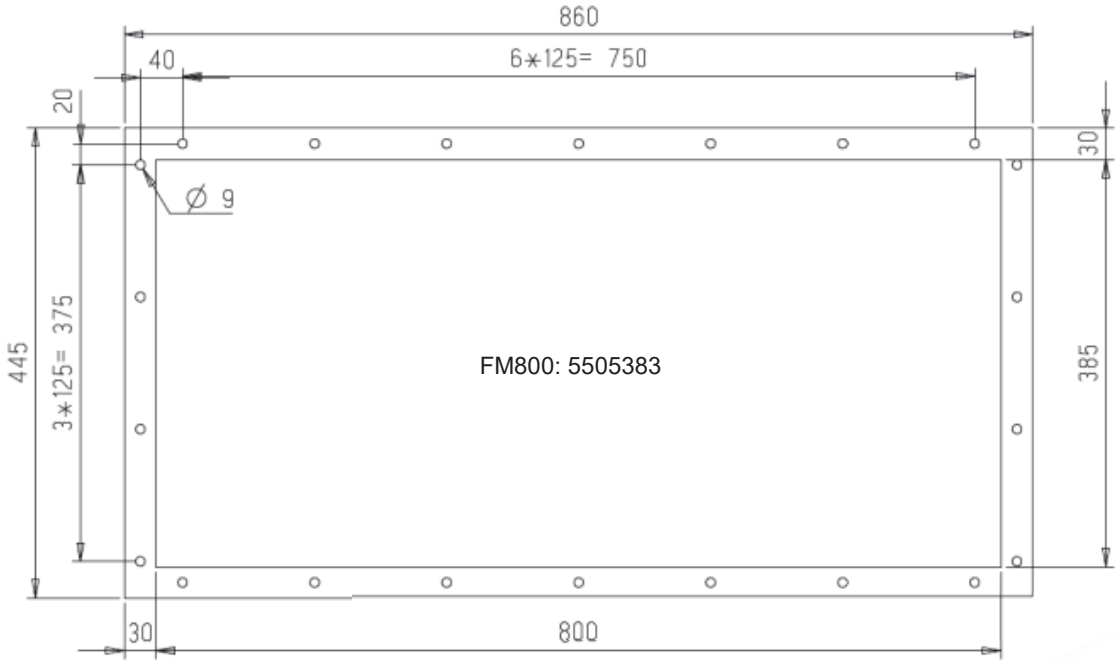
FM800 fan series: 5501833




| Type | A | B | C | D | E | F | G | H | L | W |
|---|---|---|---|---|---|---|---|---|---|---|
| FM800 series fans | 56 | 650 | 400 | 465 | 950 | 1175 | 1256 | 1115 | 1200 | 800 |

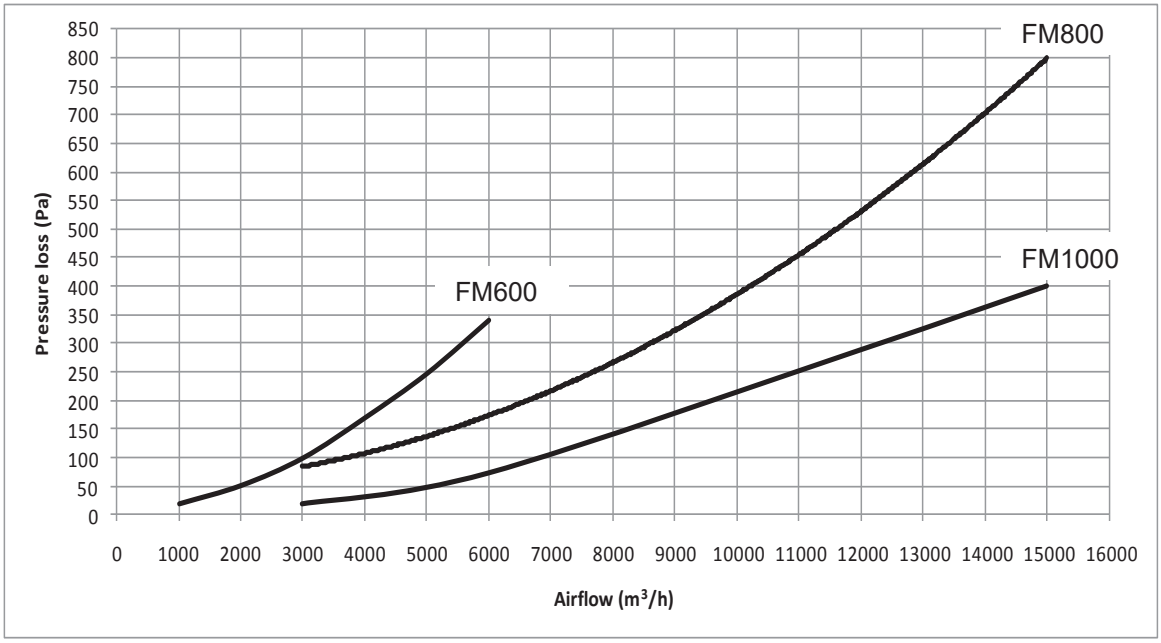
All dimensions in mm

### Flanges



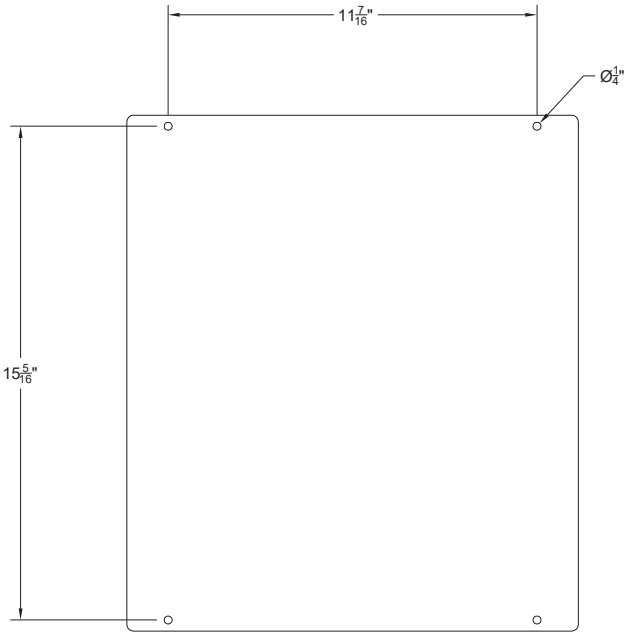

All dimensions in mm

# FM DUAL-Silencer

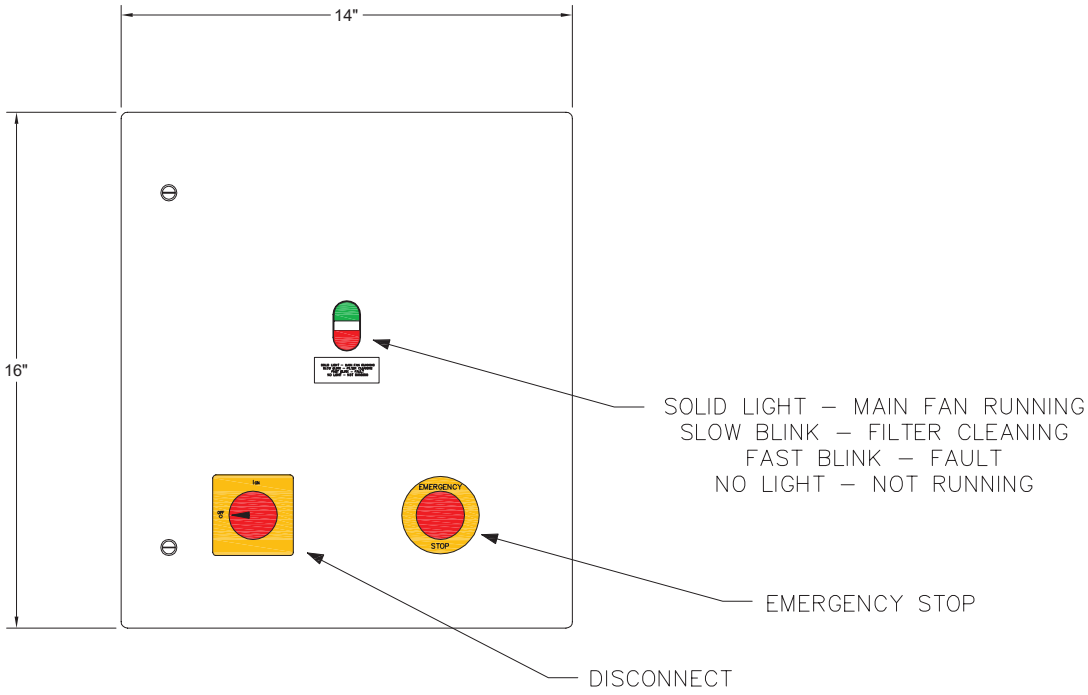



The curves indicate typical pressure drop across the silencers at different airflow volumes.

# NFPZ–2 AUTOMATIC SHAKER CLEANING CONTROL PANEL




PANEL BACK




PANEL FRONT

Nederman
4404A Chesapeake Dr
Charlotte, NC 28216
TEL: (336) 821–0800
FAX: (336) 821–0890

| | Date | Name |
|---|---|---|
| Drawn by: | 7/31/20 | D. LUMIA |
| Checked by: | | |

OPTION: SHAKER

Title: NFPZ – CONTROL PANEL



Size: A

Scale: NTS

Drawing Number: 89219034

**Technical leaflet**
QTL068(A)

**Date**
2023-03-29

# Explosion Isolation Flap Valve CARZ-N - protective system



**PATENTED PRODUCT**

**Explosion Isolation Flap Valve type CARZ-N is designed as an explosion pressure resistance equipment, which is able to prevent the transmission of dangerous effects from an explosion pressure wave and flame front to upstream areas. Certified according to EN 16447.**

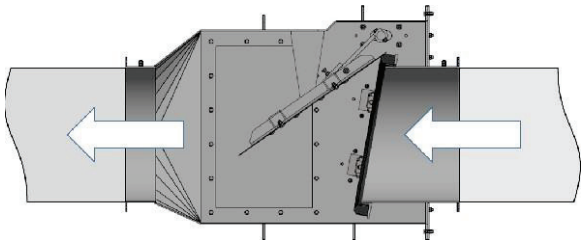
## Description

Welded construction in RAL 5009 blue painted steel plate.

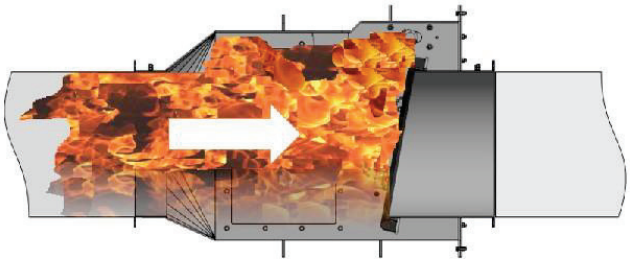
## Function

During airflow generated by main fan, the Flap plate is open. In case of an explosion in the downstream equipment (e.g. dust collector) a pressure wave will force the Flap plate to close and lock in position. Large opening angle ensures low pressure drop. When Flap plate is closed it makes an effective barrier against approaching flame front. This prevents the explosion from being transmitted to upstream work areas, protecting workers, machinery and the facility.

### Suction direction



### Explosion direction



### Marking, external zone 21

CE 1026 Ex

II D St1

II D St2

II 1/2 D Ex h IIIC T75°C Da/Db

IEC Ex IECEx FTZU 17.0015X

Ex h IIIC T75°C Da/Db

The marking is based on product certification:

- **FTZU 16 ATEX 0192X** by N.B. No. 1026 and Quality System approval by N.B.
- **IECEx FTZU 17.0015X -** Product certification according to International Certification System IECEx.

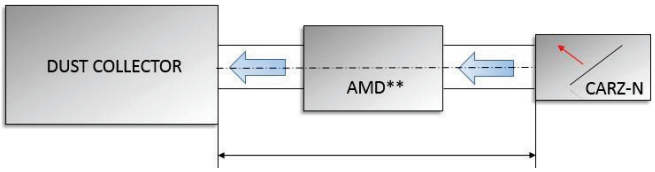
### Patent protected product:

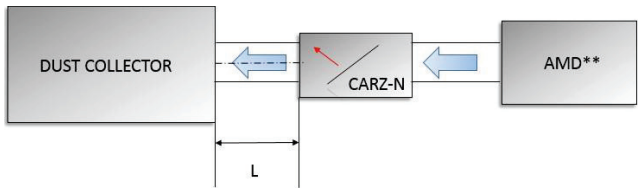
- EP patent: EP 3 343 077
- USA: US 10 315 059
- China: 201711349554.2

## Special installation requirements

**PULL configuration**


**PUSH configuration**




**AMD=Air moving device or fan

## Parameters

| Parameter | Dust type | Size 315 mm | Size 350 - 450 mm | Size 500 - 1000 mm |
|---|---|---|---|---|
| L min | Organic | 5 m (16.4 ft) for **PULL** &**PUSH** | 5,5 m (18 ft) for **PULL** | 5,5 m (18 ft) for **PULL** |
| | | | 5 m (16.4 ft) for **PUSH** | 5 m (16.4 ft) for **PUSH** |
| | Metallic | 5,3 m (17.4 ft) only for **PULL** | 5,5 m (18 ft) only for **PULL** | **N/A** |
| L max | Organic | 10,2 m (33.5 ft) for **PULL** | 10 m (32.8 ft) | 10 m (32.8 ft) |
| | | 10 m (32.8 ft) for **PUSH** | for **PULL & PUSH** | for **PULL** & **PUSH** |
| | Metallic | 10,3 m (33.8 ft) only for **PULL** | 10,5 m (34.5 ft) only for **PULL** | **N/A** |
| Max. flow velocity | 30 $m \cdot s^{-1}$ (5,906 fpm) | | | |
| Max. number of bends (between CARZ-N and protected vessel) | straight duct with max. 2 bends 90 dgr | | | |

| Parameter | All sizes |
|---|---|
| Max. flow velocity | 30 $m \cdot s^{-1}$ (5,906 fpm) |
| Max. number of bends (between CARZ-N and protected vessel) | straight duct with max. 2 bends 90 dgr |
| Operating temperature range | -20°C to +60°C |
| Ambient Temperature | |
| Inclination of the CARZ-N | Horizontally |

## Specifications

### Pull flow situation with nonmetalic dust

| Diameter [mm] | Dust explosion class | Max. $K_{st}$ [bar·m/s] | $P_{red\ max}$* [bar] | Max. dust concentration in duct | Min. Vessel [$m^3$] | Explosion shock resistance pressure [bar] | Max. MESG** [mm] | Min. instalation distance [m] | Max. instalation distance [m] |
|---|---|---|---|---|---|---|---|---|---|
| 315 | St2 | 300 | 0,5 | any | 0,46 | 1 | 1,3 | 5 | 10,2 |
| 350 | St1 | 200 | 0,5 | any | 0,9 | 1 | 1,3 | 5,5 | 10 |
| 350 | St2 | 300 | 0,4 | <LEL*** | 0,9 | 1 | 1,3 | 5,5 | 10 |
| 400 | St1 | 200 | 0,5 | any | 0,9 | 1 | 1,3 | 5,5 | 10 |
| 400 | St2 | 300 | 0,4 | <LEL*** | 0,9 | 1 | 1,3 | 5,5 | 10 |
| 450 | St1 | 200 | 0,5 | any | 0,9 | 1 | 1,3 | 5,5 | 10 |
| 450 | St2 | 300 | 0,4 | <LEL*** | 0,9 | 1 | 1,3 | 5,5 | 10 |
| 500 | St1 | 200 | 0,5 | any | 1,6 | 1 | 1,3 | 5,5 | 10 |
| 500 | St2 | 300 | 0,4 | <LEL*** | 1,6 | 1 | 1,3 | 5,5 | 10 |
| 560 | St1 | 200 | 0,5 | any | 1,6 | 1 | 1,3 | 5,5 | 10 |
| 560 | St2 | 300 | 0,4 | <LEL*** | 1,6 | 1 | 1,3 | 5,5 | 10 |
| 630 | St1 | 200 | 0,5 | any | 1,6 | 1 | 1,3 | 5,5 | 10 |
| 630 | St2 | 300 | 0,4 | <LEL*** | 1,6 | 1 | 1,3 | 5,5 | 10 |
| 710 | St1 | 200 | 0,35 | any | 3,2 | 0,7 | 1,8 | 5,5 | 10 |
| 800 | St1 | 200 | 0,35 | any | 3,2 | 0,7 | 1,8 | 5,5 | 10 |
| 900 | St1 | 200 | 0,35 | any | 3,2 | 0,7 | 1,8 | 5,5 | 10 |
| 1000 | St1 | 200 | 0,35 | any | 3,2 | 0,7 | 1,8 | 5,5 | 10 |

* Maximum explosion reduced pressure on protected vessel
**Maximum Experimental Safe Gap
***Lower Explosion Limit = MEC Minimum Explosion Concentration
Protection method of connected vessel: Explosion vents or Explosion doors (not self-closing type)

### Pull flow situation with metalic dust

| Diameter [mm] | Dust explosion class | Max. $K_{st}$ [bar·m/s] | $P_{red\ max}$* [bar] | Max. dust concentration in duct | Min. Vessel [$m_3$] | Explosion shock resistance pressure [bar] | Max. MESG** [mm] | Min. instalation distance [m] | Max. instalation distance [m] |
|---|---|---|---|---|---|---|---|---|---|
| 315 | St2 | 260 | 0,5 | <LEL*** | 0,96 | 1 | 1,3 | 5,3 | 10,3 |
| 350 | St2 | 260 | 0,5 | <LEL*** | 0,96 | 1 | 1,3 | 5,5 | 10,5 |
| 400 | St2 | 260 | 0,5 | <LEL*** | 0,96 | 1 | 1,3 | 5,5 | 10,5 |
| 450 | St2 | 260 | 0,5 | <LEL*** | 0,96 | 1 | 1,3 | 5,5 | 10,5 |

* Maximum explosion reduced pressure on protected vessel
**Maximum Experimental Safe Gap
***Lower Explosion Limit = MEC Minimum Explosion Concentration
Protection method of connected vessel: Explosion vents or Explosion doors (not self-closing type)

**Push flow situation with nonmetalic dust**

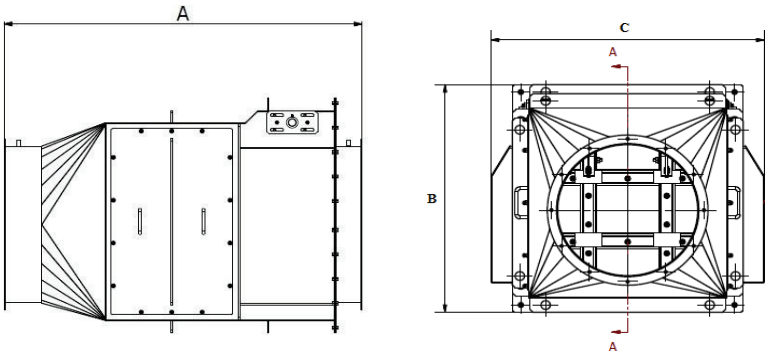
| Diameter [mm] | Dust explosion class | Max. $K_{st}$ [bar·m/s] | $P_{red\ max}$* [bar] | Max. dust concentration in duct | Min. Vessel [$m_3$] | Explosion shock resistance pressure [bar] | Max. MESG** [mm] | Min. instalation distance [m] | Max. instalation distance [m] |
|---|---|---|---|---|---|---|---|---|---|
| 315 | St2 | 300 | 0,5 | any | 0,46 | 1 | 1,3 | 5 | 10 |
| 350 | St1 | 200 | 0,5 | any | 1,6 | 1 | 1,3 | 5 | 10 |
| 400 | St1 | 200 | 0,5 | any | 1,6 | 1 | 1,3 | 5 | 10 |
| 450 | St1 | 200 | 0,5 | any | 1,6 | 1 | 1,3 | 5 | 10 |
| 500 | St1 | 200 | 0,5 | any | 1,6 | 1 | 1,3 | 5 | 10 |
| 560 | St1 | 200 | 0,5 | any | 1,6 | 1 | 1,3 | 5 | 10 |
| 630 | St1 | 200 | 0,5 | any | 1,6 | 1 | 1,3 | 5 | 10 |
| 710 | St1 | 200 | 0,4 | any | 3,2 | 0,7 | 1,8 | 5 | 10 |
| 800 | St1 | 200 | 0,4 | any | 3,2 | 0,7 | 1,8 | 5 | 10 |
| 900 | St1 | 200 | 0,4 | any | 3,2 | 0,7 | 1,8 | 5 | 10 |
| 1000 | St1 | 200 | 0,4 | any | 3,2 | 0,7 | 1,8 | 5 | 10 |

* Maximum explosion reduced pressure on protected vessel
**Maximum Experimental Safe Gap
***Lower Explosion Limit = MEC Minimum Explosion Concentration
Protection method of connected vessel: Explosion vents or Explosion doors (not self-closing type)

MESG (mm) is calculated from MIE (mJ) and MIT (°C) using the following equation (Eckhoff, 2003)*****:

$$MESG = 1{,}01 \times (MIE \times (MIT + 273) / 273)\ \hat{}\ 0{,}157$$

## Dimensions

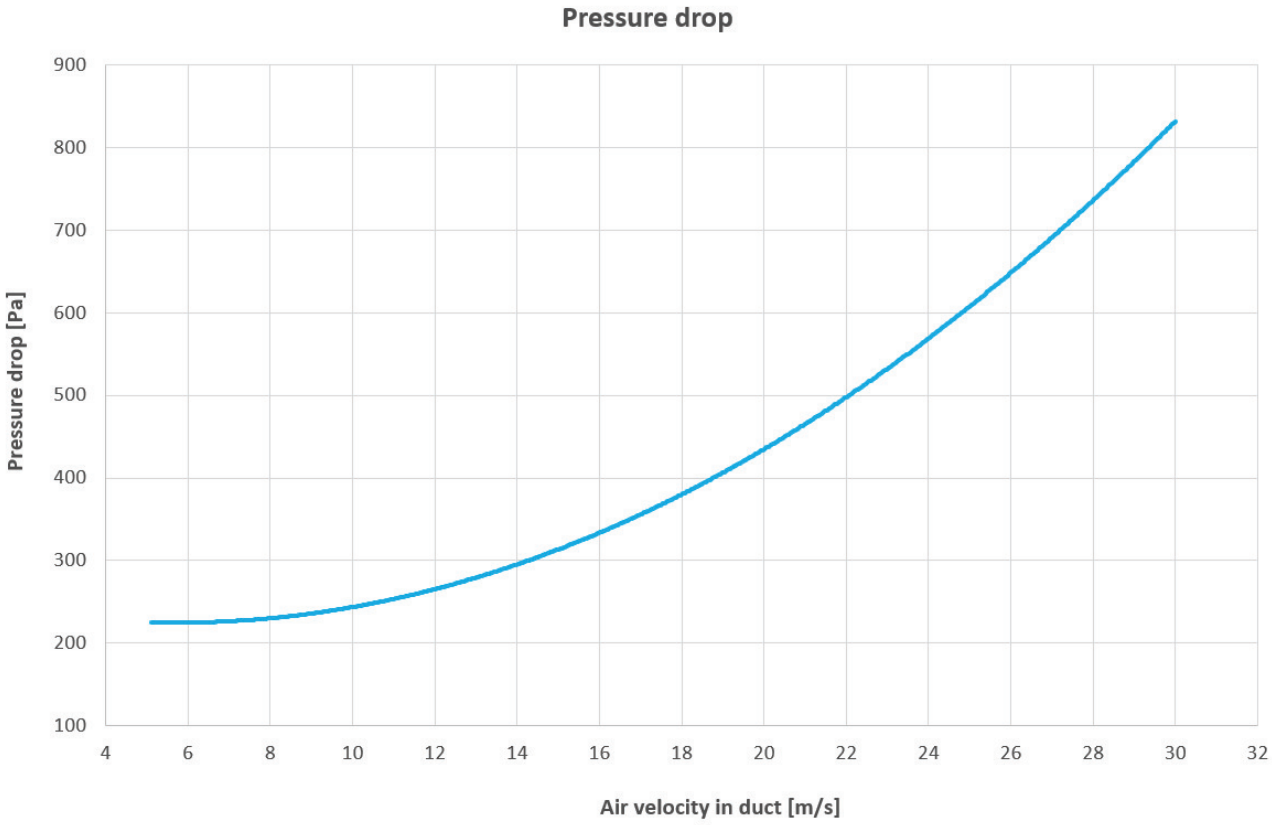



| Flap valve size ØD | Dimensions [mm] | | | Weight [kg] | Maximum Equipment category* | Part number | | |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | | | FL | NW | QF |
| 315 mm | 1095 | 643 | 857 | 140 | 2 | 73008407 | 73008408 | 73008413 |
| 350 mm | 1105 | 685 | 895 | 145 | 2 | 73008409 | 73008410 | 73008414 |
| 400 mm | 1115 | 715 | 948 | 157 | 2 | 73008411 | 73008412 | 73008415 |
| 450 mm | 1109 | 1118 | 973 | 175 | 2 | 73007816 | 73007817 | N/A |
| 500 mm | 1193 | 1168 | 1012 | 200 | 2 | 73007839 | 73007840 | N/A |
| 560 mm | 1294 | 1228 | 1040 | 224 | 2 | 73007845 | 73007846 | N/A |
| 630 mm | 1409 | 1298 | 1129 | 260 | 2 | 73007851 | 73007852 | N/A |
| 710 mm | 1489 | 1124 | 1270 | 380 | 2 | 73008055 | 73008056 | N/A |
| 800 mm | 1554 | 1214 | 1354 | 431 | 2 | 73008058 | 73008059 | N/A |
| 900 mm | 1636 | 1320 | 1451 | 490 | 2 | 73008060 | 73008061 | N/A |
| 1000 mm | 1805 | 1410 | 1540 | 566 | 2 | 73008062 | 73008063 | N/A |

* Sizes 450-1000 for category 3 with IEC EX certificate on special request.
**NOTE.** Category 3 - normal level of protection zone 2 or 22, category 2 - high level of protection zone 1,2 or 21,22 according to 2014/34/EU.

**FL -** bolted flange,
**QF** - flange for **Q***uick* **F***ittings* type ducting system,
**NW -** bolted flange according to standard **DIN 24154-R2.**

## Chart of pressure drop vs. velocity




## Accessories

Manufacturer offers accessories that must be ordered separately:

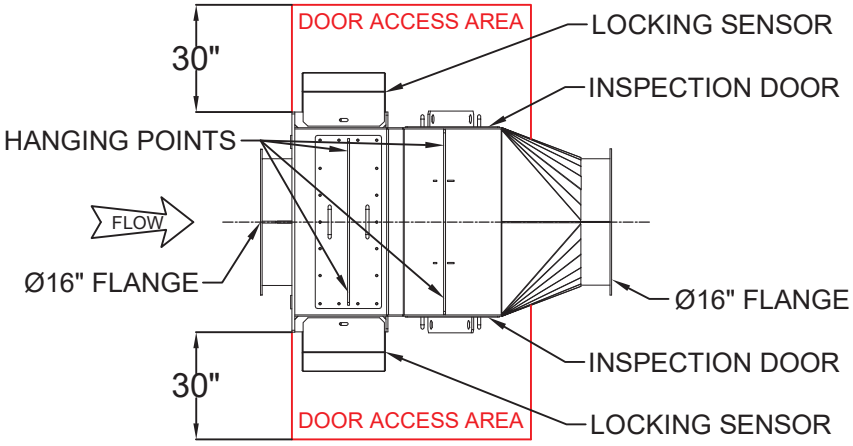
- Flap lock indicator II 2 D-Ex tb IIIC T85°C Db, IP66/67 - part number: **73007978**.
- Flap lock indicator not for an external explosive atmosphere - part number: **73007979**.

Contact Nederman for other configurations with dust build-up sensor for NFPA 69 compliance.

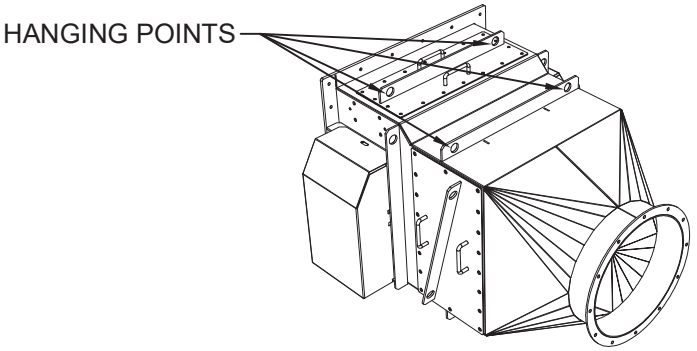
WEIGHT: 386 LBS
LOCK INDICATOR ZONE 22 PART NUMBER: 73007978
LOCK INDICATOR NON ZONE PART NUMBER: 73007979

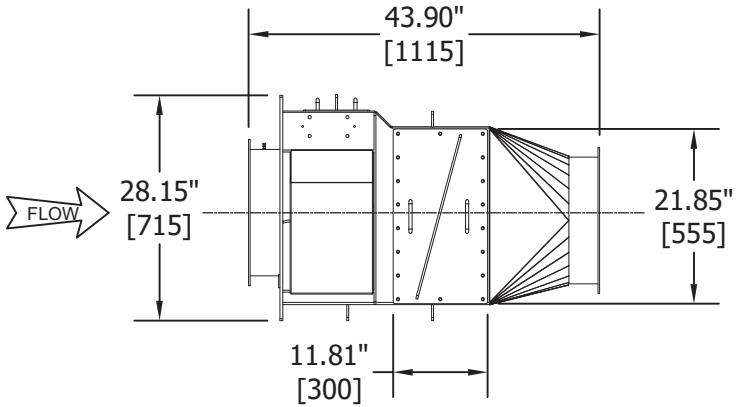
# CARZ N 400 (16IN)

**PART NUMBER: 73008483**

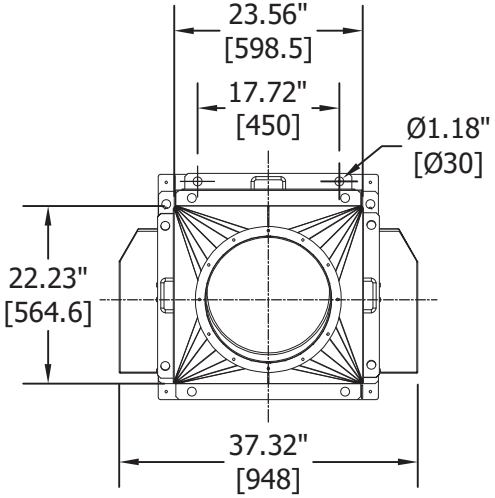



PLAN VIEW

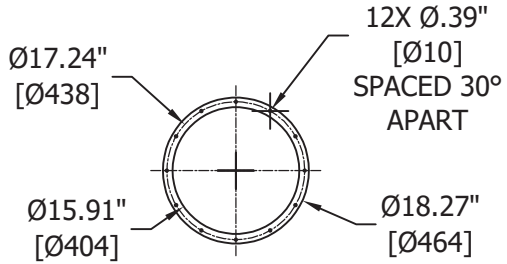



SIDE VIEW




END VIEW




FLANGE DETAIL

**GENERAL NOTES**

- MUST BE INSTALLED AT A MAXIMUM DISTANCE OF 32' FROM THE COLLECTOR INLET, AND A MINIMUM DISTANCE OF 18' FOR NEGATIVE CONFIGURATION AND 16.4' FOR POSITIVE CONFIGURATION.
- MAXIMUM TWO ELBOWS (90°) BETWEEN CARZ-N AND PROTECTED VESSEL.
- CONSULT TECHNICAL LEAFLET FOR INSTALLATION GUIDELINES.

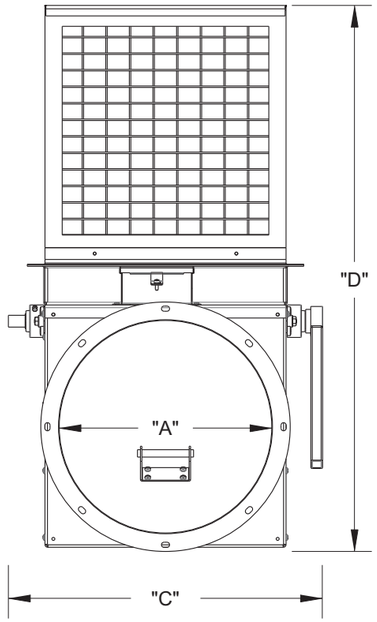

Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 855-925-1609
FAX: +1 905-366-2206

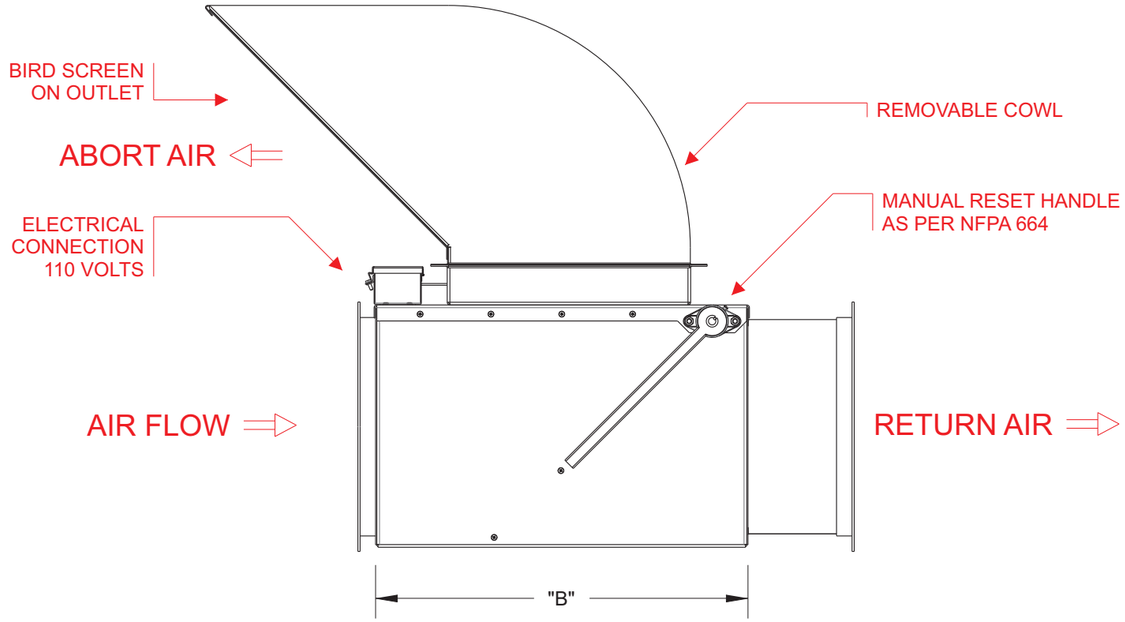


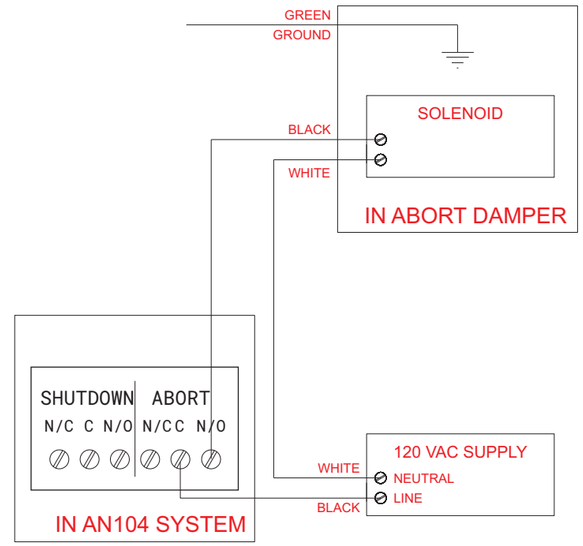

| | NAME | DATE |
|---|---|---|
| DRAWN: | C.SCIDA | 18-Feb-26 |
| CHECKED: | | |

| Rev: | Scale: |
|---|---|
| A | 1/2" = 1' |
| Sheet #: | Size: |
| 1 of 1 | A |

Title: CARZ N 400 (16IN) FLANGED EXPLOSION ISOLATION FLAP




| A - Size | | 18 |
|---|---|---|
| OVERALL LENGTH * B | IN | 31.8 |
| OVERALL WIDTH C | IN | 28.6 |
| OVERALL HEIGHT D | IN | 45.9 |
| APPROX. WEIGHT * | LBS | 290 |

* NOTE: LENGTH AND WEIGHT DOES NOT INCLUDE THE TRANSITIONS

SPECIFICATIONS

BODY MATERIAL: 12 GA MILD STEEL
BLADE MATERIAL: 12 GA MILD STEEL
FINISH: POWDER COATED SAFETY YELLOW

NOTES

1. MATING FLANGES SUPPLIED FOR INLET/OUTLET

2. CONFIRM SIDE FOR HANDLE AT TIME OF ORDER

ABORT GATE OPERATION

1. SIGNAL FROM SPARK DETECTION PANEL ACTIVATES GATE TO ABORT POSITION, AND 120 POWER OUT TO ALARM LIGHT IF DESIRED.

2. AFTER CONDITIONS ARE CORRECTED, GATE MUST BE MANUALLY RESET BY MOVING ARM UP INTO LATCHED POSITION.

3. SAFE ACCESS IS REQUIRED AT HANDLE(S) FOR RESETTING GATE.

ABORT GATE INSTALLATION

1. MOUNT IN HORIZONTAL DUCT WITH MINIMUM ONE DUCT DIAMETER OF STRAIGHT DUCT BEFORE AND AFTER DAMPER FOR PROPER BLADE OPERATION.

2. AFTER INSTALLED, CHECK DAMPER OPERATION TO MAKE SURE GATE FALLS FREELY. THIS CAN BE DONE MANUALLY BY PULLING SOLENOID BACK OR ELECTRICALLY BY APPLYING 120VAC TO 120V SUPPLY POINTS IN CONTROL BOX.

3. IF GATE BINDS LOOSEN BOLTS AT BEARING FLANGES AND REPOSITION UNTIL GATE FALLS FREELY.

| NO. | REVISION | DATE | BY |
|---|---|---|---|
| | | | |

HANSENTEK™

4141 SLADEVIEW CRES. UNIT 18
MISSISSAUGA ON L5L 5T1

TEL: 905-607-5780
E-MAIL: INFO@HANSENTEK.COM

PROJECT NAME: Sir Allan MacNab Secondary School c/o Nederman Inc

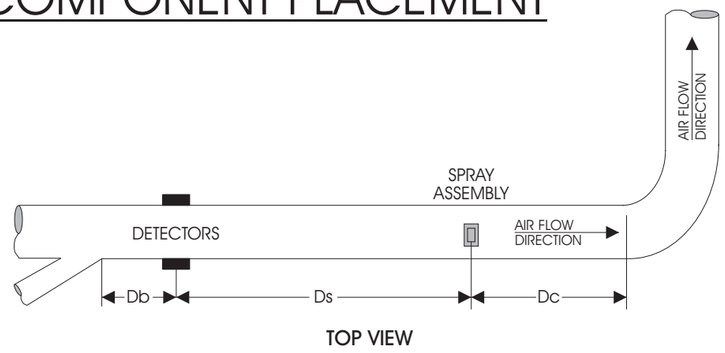
TITLE: 18” Ø ABORT DAMPER

SCALE: N.T.S.

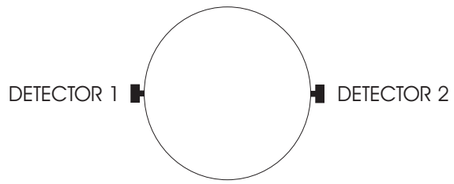
CREATED: 2026-02-18 | DWG No: ID074922SY | Rev: 0

CREATED BY: HS | CHECKED BY: RF | SHEET 1 OF 1

# COMPONENT PLACEMENT




TOP VIEW




| CALCULATION FOR COMPONENT PLACEMENT (MINIMUM DISTANCES) | |
|---|---|
| AIRFLOW VOLUME | 5100 cfm |
| DIAMETER OF DUCT | 16” |
| AIR SPEED | 3653 feet per minute |
| Minimum Distance DETECT TO SPRAY DISTANCE (Ds) | 20 feet |
| STRAIGHT DUCT DOWNSTREAM FROM SPRAY (Dc) | 5 feet |
| LAST BRANCH DIAMETER | TBD |
| BRANCH TO DETECTOR DISTANCE (Db) | 4 feet |
| TOTAL DISTANCE REQUIRED (Db + Ds + Dc) | 29 feet |

| BILL OF MATERIALS | | | |
|---|---|---|---|
| ITEM | PART # | DESCRIPTION | QTY |
| 1 | AN104 | One Zone Control Panel | 1 |
| 2 | 120-1 | Infra-red Spark Detector | 2 |
| 3 | 901-1 | Water Spray Assembly | 1 |
| 4 | 902-1 | Deluge Water Spray Assembly | 0 |
| 5 | 922-1 | 1" Ball Valve & Supervisory Switch | 1 |
| 6 | 920-1 | Water Flow Switch | 0 |
| 7 | 930-1 | Heat Detector - 190 °F | 0 |
| 8 | 940-1 | 4.5 Amp Hour Batteries | 1 |
| 9 | 910-1 | 24 Volt Alarm Horn | 1 |

# GENERAL NOTES

1. Dust collecting or conveyance duct velocities must be confirmed prior to Spark Detection System installation.

2. All wiring shall be as per all local and National electrical codes. An earth ground is required regardless of local code requirements.

3. All panels, enclosures, conduits and devices shall be grounded to a good earth ground.

4. All low voltage wiring to Detectors, Horns, Spray Assemblies and inputs must be in metallic conduit and at least 24" away from high voltage lines (above 400 volts).

5. A clean, uninterrupted source voltage must be used. The circuit breaker must be dedicated to the Spark Detection System and must be lockable.

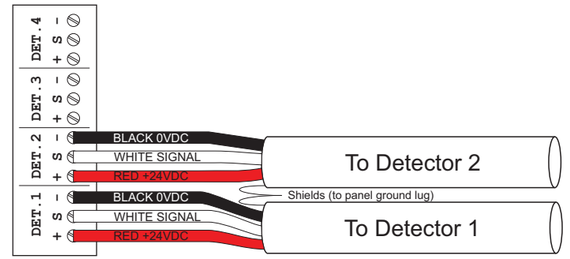
6. All wiring to abort dampers and starters must be taken from a separate electrical circuit. No electrical needs can be sourced from the circuit breaker that is being used by the Spark Detection Panel.

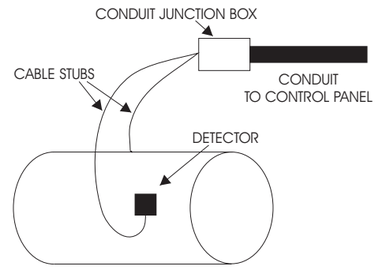
7. Installation and equipment must conform to the requirements of the Authority Having Jurisdiction.

8. Notes are to be read in conjunction with the installation and user manual.

# WIRING


# DETECTOR WIRING

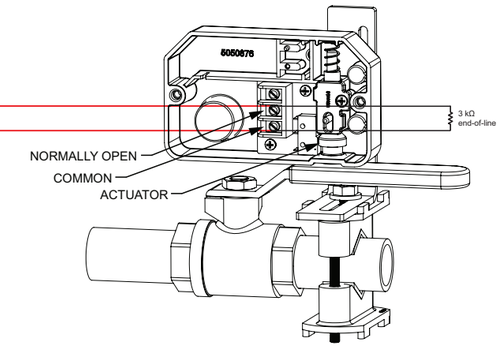


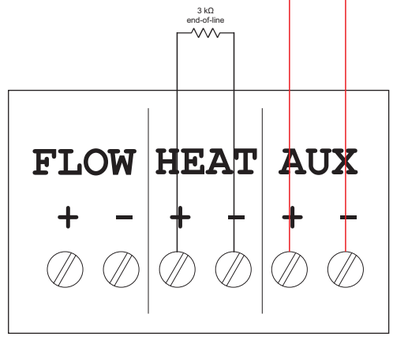




HANSENTEK

| THE AN104 SPARK DETECTION SYSTEM | | |
|---|---|---|
| Revision: 0 | Date: February 18, 2026 | By: HS |
| Sir Allan MacNab Secondary School c/o Nederman Inc | | |
| SERIAL #: TBD | DRW #: ID074921SY | |
| | FM file# 3044485 | |
| Checked By: RF | Sheet 1 of 6 | |

# INPUT WIRING




HANSENTEK

| THE AN104 SPARK DETECTION SYSTEM | | |
|---|---|---|
| Revision: 0 | Date: February 18, 2026 | By: HS |
| Sir Allan MacNab Secondary School<br>c/o Nederman Inc | | |
| SERIAL #: TBD | DRW #: ID074921SY | |
| | FM file# 3044485 | |
| Checked By: RF | Sheet 2 of 6 | |

# GENERAL PLUMBING NOTES

1. The water pressure at the valve must be at least 50 PSI and must not exceed 125 PSI. The water supply must deliver a minimum of 16.6 US gallons per minute per nozzle. A pressure reducer must be used if water pressure exceeds 125 PSI.

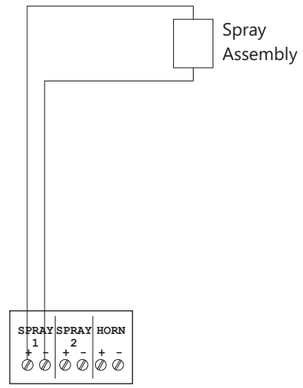
2. Water pipe, strainers, valves and nozzles installed outside must be heat traced and insulated. Heat tracing and insulation must be adequate to withstand the temperature extremes and environmental conditions of the area where it is installed.
**Note: A Glycol loop must not be used.**

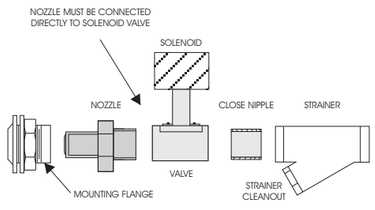
3. Strainer must be connected directly to solenoid valve. The solenoid valve must connect directly to the nozzle. Nozzle to be installed at the top of the duct.

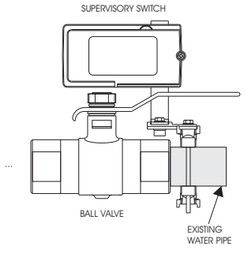
4. Piping and fittings must conform to ASTM and NFPA standards. Minimum water supply line for a single nozzle should be ¾" but 1" is preferred.

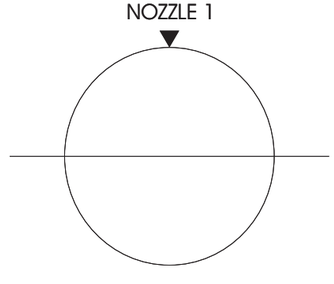
5. Notes to be read in conjunction with installation and user manual.

# SPRAY WIRING




HANSENTEK

| THE AN104 SPARK DETECTION SYSTEM | | |
|---|---|---|
| Revision: 0 | Date: February 18, 2026 | By: HS |
| Sir Allan MacNab Secondary School<br>c/o Nederman Inc | | |
| SERIAL #: TBD | DRW #: ID074921SY | |
| | FM file# 3044485 | |
| Checked By: RF | Sheet 3 of 6 | |

# GENERAL ELECTRICAL NOTES

1. No branching of wires permitted on supervised circuits. End of Line resistors must be at the last device in order to detect an open circuit. Remove any temporary End of Line resistors in the control panel when any input circuit is connected.

2. Field wiring must be checked for shorts or grounds before connecting to the control panel. DO NOT MEGGER LINES.

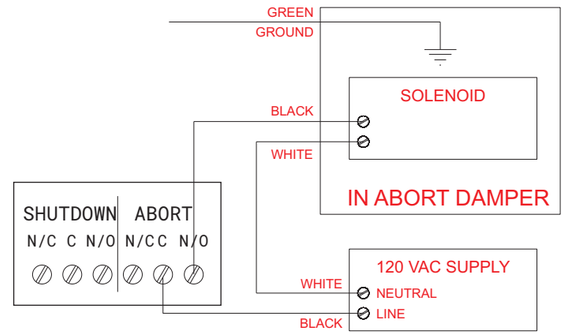
3. Detector wires shall be run in separate conduit away from all high voltage wiring. Spray Assembly wiring may be in the same conduit.

4. The Main Control Unit should be mounted on a wall, at least 48 inches away from any high voltage sources (greater than 400 volts).

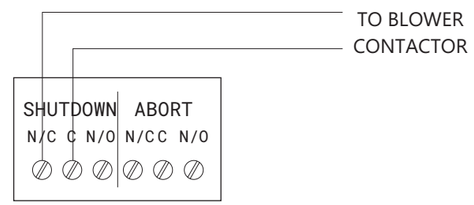
5. Wiring minimum sizes: Power Input - 14 AWG/600 Volts; Detectors - 18 AWG stranded and shielded; Auxiliary Inputs, Horn, Alarm/Trouble - 18 AWG; All other wiring - 14 AWG.

6. Notes to be read in conjunction with installation and user manual.

# ABORT DAMPER WIRING



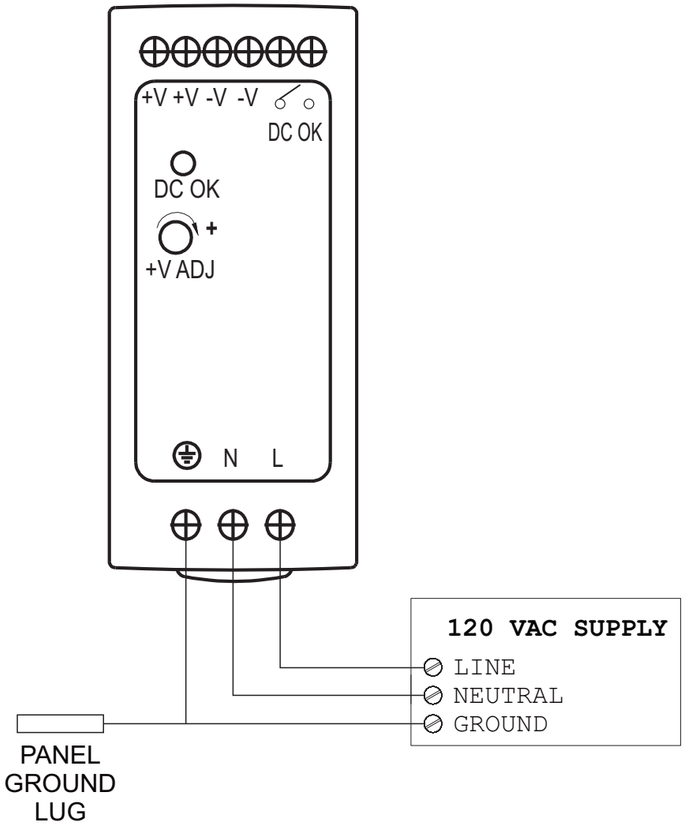

# SHUTDOWN WIRING

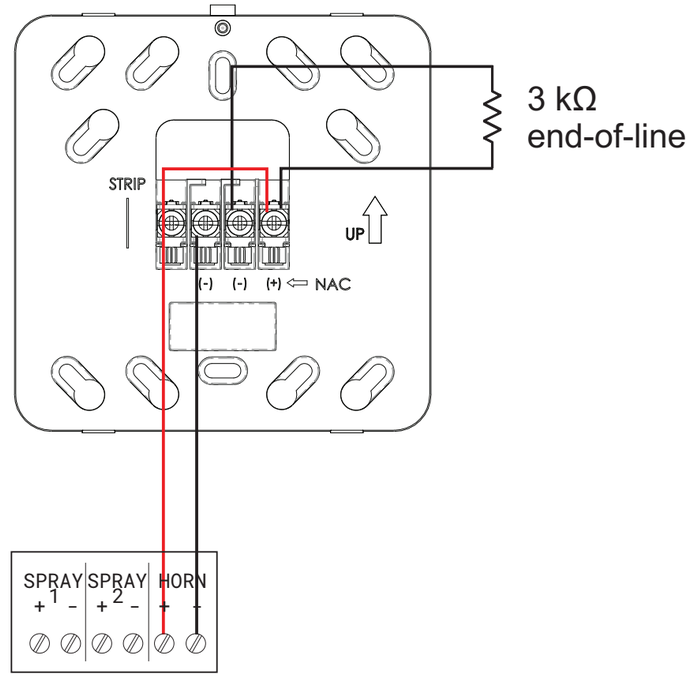


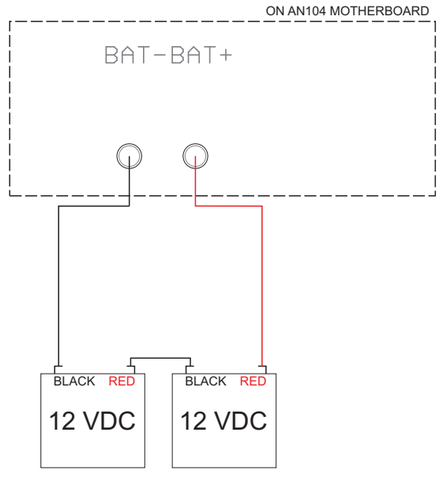

HANSENTEK

| THE AN104 SPARK DETECTION SYSTEM | | |
|---|---|---|
| Revision: 0 | Date: February 18, 2026 | By: HS |
| Sir Allan MacNab Secondary School<br>c/o Nederman Inc | | |
| SERIAL #: TBD | DRW #: ID074921SY | |
| | FM file# 3044485 | |
| Checked By: RF | Sheet 4 of 6 | |

# SYSTEM WIRING




HANSENTEK

| THE AN104 SPARK DETECTION SYSTEM | | |
|---|---|---|
| Revision: 0 | Date: February 18, 2026 | By: HS |
| Sir Allan MacNab Secondary School<br>c/o Nederman Inc | | |
| SERIAL #: TBD | DRW #: ID074921SY | |
| | FM file# 3044485 | |
| Checked By: RF | Sheet 5 of 6 | |

# SWITCH SETTINGS

| SWITCH #: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spray 2 Seconds | | | | | | | | | | | | |
| Spray 5 Seconds | 0 | 1 | | | | | | | | | | |
| Spray 10 Seconds | | | | | | | | | | | | |
| Spray 30 Seconds | | | | | | | | | | | | |
| Two Detectors | | | 0 | | | | | | | | | |
| Four Detectors | | | | | | | | | | | | |
| Flow Monitoring | | | | | | | | | | | | |
| No Flow Switch | | | | 1 | | | | | | | | |
| Output 2 (S2) is Second Spray | | | | | 0 | | | | | | | |
| Output 2 (S2) is Deluge | | | | | | | | | | | | |
| Deluge 10 minutes | | | | | | | | | | | | |
| Deluge Continuous – until reset | | | | | | 1 | | | | | | |
| Shutdown on 1 Spray | | | | | | | 0 | | | | | |
| Shutdown on 4 sprays in 5 minutes | | | | | | | | | | | | |
| Shutdown/Abort on D3, D4 only | | | | | | | | | | | | |
| Shutdown on D1, D2, D3 or D4 | | | | | | | | 1 | | | | |
| Auto Self-Test On | | | | | | | | | | | | |
| Auto Self-Test Off | | | | | | | | | 1 | | | |
| Abort 10 Seconds | | | | | | | | | | 0 | | |
| Abort Until Clear | | | | | | | | | | | | |
| Enable Spray 1 | | | | | | | | | | | 0 | |
| Disable Spray 1 | | | | | | | | | | | | |
| Enable Spray 2 | | | | | | | | | | | | |
| Disable Spray 2 | | | | | | | | | | | | 1 |

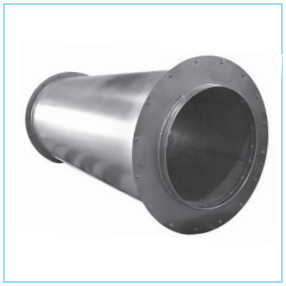
HANSENTEK

| THE AN104 SPARK DETECTION SYSTEM | | |
|---|---|---|
| Revision: 0 | Date: February 18, 2026 | By: HS |
| Sir Allan MacNab Secondary School<br>c/o Nederman Inc | | |
| SERIAL #: TBD | DRW #: ID074921SY | |
| | FM file# 3044485 | |
| Checked By: RF | Sheet 6 of 6 | |

# Silencer

## Ordering Information

- When ordering, specify material, gauge (if non-standard), dimension and end type.
- Reduces noise created by air movement inside the duct. Due to varying applications, no decibel testing has been performed on this product.
- Air flow directional arrow sticker is attached to product.



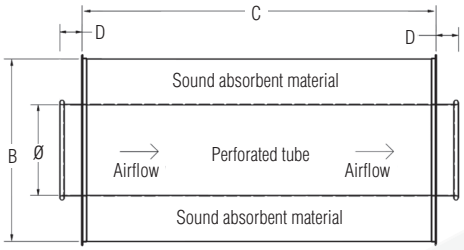
| ø *in.* | B OD *in.* | C Body Length *in.* | D (QF) *in.* | D (AFL/ FFL) *in.* | Std Weight *Lbs* |
|---|---|---|---|---|---|
| 3 | 11 | 24 | 2 (for each end) | 3.5 (for each end) | 10 |
| 4 | 12 | 24 | | | 21 |
| 5 | 13 | 24 | | | 35 |
| 6 | 14 | 26 | | | 43 |
| 7 | 15 | 26 | | | 54 |
| 8 | 16 | 31 | | | 65 |
| 9 | 17 | 36 | | | 76 |
| 10 | 18 | 44 | | | 89 |
| 11 | 19 | 50 | | | 96 |
| 12 | 20 | 50 | | | 104 |
| 13 | 21 | 54 | | | 113 |
| 14 | 22 | 54 | | | 122 |
| 15 | 23 | | | | 149 |
| 16 | 24 | | | | 176 |
| 17 | 25 | | | | 201 |
| 18 | 26 | | | 4 (for each end) | 225 |
| 19 | 27 | | | | 245 |
| 20 | 28 | | | | 265 |
| 21 | 29 | | | | 288 |
| 22 | 30 | | | | 310 |
| 23 | 31 | 60 | | | 358 |
| 24 | 32 | | | | 406 |
| 26 | 34 | | N/A | | 546 |
| 28 | 36 | | | | 600 |
| 30 | 38 | | | | 678 |
| 32 | 40 | | | | 700 |
| 34 | 42 | | | | 770 |
| 36 | 44 | | | | 897 |
| 38 | 46 | | | | 974 |
| 40 | 48 | | | | 1118 |

## QF Material Options

| | Galv (Collar) | | | SS (Collar) | | |
|---|---|---|---|---|---|---|
| | Gauges | Size (in) Min. ø | Size (in) Max. ø | Gauges | Size (in) Min. ø | Size (in) Max. ø |
| Standard | 20 | 3 | 16 | 20 | 3 | 16 |
| | 16 | 17 | 40 | 16 | 17 | 40 |

## Flanged Material Options

| | Galv (Collar) | | | SS (Collar) | | |
|---|---|---|---|---|---|---|
| | Gauges | Size (in) Min. ø | Size (in) Max. ø | Gauges | Size (in) Min. ø | Size (in) Max. ø |
| Standard | 20 | 3 | 16 | 20 | 3 | 16 |
| | 16 | 17 | 40 | 16 | 17 | 40 |




**Construction**

**Collars**: Caulked and painted.

**Outer Tube:** On 16" diameter pipe and all smaller sizes, longitudinal seam is laser welded. On 17" and greater, seam is plasma welded. The outer tube gauge is 20ga for sizes 3" - 16" and 16ga for sizes 17" and larger.

Cover Plate: Not intended to be removeable. 16ga construction.

**Optional End Types:** Standard QF end can be changed to Raw ID (RI), Raw OD (RO), No Fitting (NF), Hose Adapter (RF), Flat Flange (FFL), Angle Flange (AFL), or Van Stone (VS).

09/12/23

*IF IN DOUBT ASK*

General Notes:

Design standards are based upon the following two reference manuals:

- SMACNA, (2013). *Round Industrial Duct Construction Standards,* (3rd ed.).
- ACGIH, (2019). *Industrial Ventilation: A Manual of Recommended Practice for Design* (30th ed.).

All tables, figures, and recommendations shown in this document are based upon SMACNA, (2013). *Round Industrial Duct Construction Standards,* (3rd ed.).

Class II dust is assumed throughout this document.

Manual blast gates are provided by Nederman to balance the dust collection system. Under no circumstance should ANY blast gates be adjusted without first consulting a Nederman engineer. Failure to comply may result in decreased system performance and/or material build up in the ductwork, potentially leading to failure of the system.

The main trunk of the dust collection system should be inspected monthly for material build up.

General Hanging Notes:

All ductwork should be supported by an appropriate method capable of handling the weight of pipe partially filled with material. These supports should occur at an interval no greater than 10ft. Additional support is required at each branch and vertical drop. More frequent support may be necessary depending on the particular geometric or structural requirements of the installation site or if the bulk material density is greater than 25 lb/ft$^3$. Seismic requirements are not included.

Ductwork is assumed to hang with the centerline 10ft below the bottom of the roof support structure.

Lateral ductwork supports should occur every 20 linear feet of ductwork.

Duct support design is based upon a bulk material density of 25 lb/ft$^3$ with the main trunk line 25% full. If the material being collected is heavier, then an appropriate change to the duct support method may need to occur.

It is the installer's responsibility to employ an appropriate method to support the ductwork which meets the minimum standards outlined in this document.

Hardware used to support ductwork should a minimum of SAE Grade 5.

If explosive dust is present, the Nederman CARZ damper must be supported both vertically AND laterally in parallel with the duct.

Connection to the roof supports must be by an appropriate method that does not exceed the structural capacity of the roof structure.

It is the customer's responsibility to ensure that the roof structure is capable of supporting the weight of the dust collection system.

Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 (855) 925-1609
FAX: +1 (905) 366-2206



TOLERANCE
ALL DIMS IN INCHES
.X ±.063
.XX ±.031
.XXX ±.015
ANGULAR ±1°
UNLESS OTHERWISE SPECIFIED

Material:

| | NAME | DATE |
|---|---|---|
| DRAWN: | M. Davidson | 2/27/2020 |
| CHECKED: | R. Williamson | |

Rev: A
Scale: NTS
Sheet #: 1 of 8
Size: A

Title: General Notes for Ductwork Installation

Part Number:

Drawing Number: DUCT_GUIDELINES

*IF IN DOUBT ASK*

## Table 1. Nordfab QF Duct Weight L = 5ft

| Diameter | Gage | Weight 0% Fill | Weight 25% Fill | Weight 50% Fill |
|---|---|---|---|---|
| [in] | [ga] | [lbs] | [lbs] | [lbs] |
| 3 | 22 | 4.00 | 5.53 | 7.07 |
| 4 | 22 | 5.35 | 8.08 | 10.80 |
| 5 | 22 | 6.65 | 10.91 | 15.17 |
| 6 | 22 | 7.93 | 14.07 | 20.20 |
| 7 | 22 | 11.70 | 20.05 | 28.40 |
| 8 | 22 | 13.25 | 24.16 | 35.07 |
| | 14 | 36.00 | 46.91 | 57.82 |
| 9 | 22 | 14.92 | 28.73 | 42.53 |
| | 14 | 40.00 | 53.81 | 67.61 |
| 10 | 22 | 16.60 | 33.64 | 50.69 |
| | 14 | 44.00 | 61.04 | 78.09 |
| 11 | 22 | 18.10 | 38.72 | 59.35 |
| | 14 | 49.00 | 69.62 | 90.25 |
| 12 | 22 | 19.75 | 44.29 | 68.84 |
| | 14 | 53.00 | 77.54 | 102.09 |
| 13 | 20 | 21.40 | 50.20 | 79.01 |
| | 14 | 57.00 | 85.80 | 114.61 |
| 14 | 20 | 27.30 | 60.71 | 94.11 |
| | 14 | 61.00 | 94.41 | 127.81 |
| 15 | 20 | 29.25 | 67.60 | 105.95 |
| | 14 | 66.00 | 104.35 | 142.70 |
| 16 | 20 | 31.15 | 74.78 | 118.42 |
| | 14 | 70.00 | 113.63 | 157.27 |
| 17 | 20 | 33.09 | 82.35 | 131.61 |
| | 14 | 74.00 | 123.26 | 172.52 |
| 18 | 20 | 34.00 | 89.22 | 144.45 |
| | 14 | 79.00 | 134.22 | 189.45 |
| 19 | 20 | 36.00 | 97.53 | 159.06 |
| | 14 | 83.00 | 144.53 | 206.06 |
| 20 | 20 | 38.00 | 106.18 | 174.35 |
| | 14 | 87.00 | 155.18 | 223.35 |
| 21 | 20 | 40.00 | 115.17 | 190.33 |
| | 14 | 92.00 | 167.17 | 242.33 |
| 22 | 20 | 42.00 | 124.49 | 206.99 |
| | 14 | 96.00 | 178.49 | 260.99 |
| 23 | 20 | 44.00 | 134.16 | 224.33 |
| | 14 | 100.00 | 190.16 | 280.33 |
| 24 | 20 | 45.82 | 143.99 | 242.17 |
| | 14 | 104.00 | 202.17 | 300.35 |

*All weights are calculated per 5ft section of pipe.

## Table 2. Nordfab AF Duct Weight L = 5ft

| Diameter | Gage | Weight 0% Fill | Weight 25% Fill | Weight 50% Fill |
|---|---|---|---|---|
| [in] | [ga] | [lbs] | [lbs] | [lbs] |
| 3 | 22 | 5.40 | 6.93 | 8.47 |
| 4 | 22 | 7.05 | 9.78 | 12.50 |
| 5 | 22 | 9.05 | 13.31 | 17.57 |
| 6 | 22 | 10.73 | 16.87 | 23.00 |
| 7 | 22 | 15.70 | 24.05 | 32.40 |
| 8 | 22 | 17.75 | 28.66 | 39.57 |
| | 14 | 39.80 | 50.71 | 61.62 |
| 9 | 22 | 17.75 | 31.56 | 45.36 |
| | 14 | 45.10 | 58.91 | 72.71 |
| 10 | 22 | 19.92 | 36.96 | 54.01 |
| | 14 | 50.10 | 67.14 | 84.19 |
| 11 | 22 | 23.10 | 43.72 | 64.35 |
| | 14 | 55.50 | 76.12 | 96.75 |
| 12 | 22 | 25.10 | 49.64 | 74.19 |
| | 14 | 60.76 | 85.30 | 109.85 |
| 13 | 20 | 27.75 | 56.55 | 85.36 |
| | 14 | 65.50 | 94.30 | 123.11 |
| 14 | 20 | 29.90 | 63.31 | 96.71 |
| | 14 | 70.50 | 103.91 | 137.31 |
| 15 | 20 | 44.25 | 82.60 | 120.95 |
| | 14 | 80.50 | 118.85 | 157.20 |
| 16 | 20 | 47.15 | 90.78 | 134.42 |
| | 14 | 86.00 | 129.63 | 173.27 |
| 17 | 20 | 49.59 | 98.85 | 148.11 |
| | 14 | 90.50 | 139.76 | 189.02 |
| 18 | 20 | 51.00 | 106.22 | 161.45 |
| | 14 | 96.00 | 151.22 | 206.45 |
| 19 | 20 | 55.00 | 116.53 | 178.06 |
| | 14 | 100.50 | 162.03 | 223.56 |
| 20 | 20 | 57.00 | 125.18 | 193.35 |
| | 14 | 106.00 | 174.18 | 242.35 |
| 21 | 20 | 59.50 | 134.67 | 209.83 |
| | 14 | 112.50 | 187.67 | 262.83 |
| 22 | 20 | 63.50 | 145.99 | 228.49 |
| | 14 | 117.50 | 199.99 | 282.49 |
| 23 | 20 | 65.50 | 155.66 | 245.83 |
| | 14 | 122.50 | 212.66 | 302.83 |
| 24 | 20 | 68.82 | 166.99 | 265.17 |
| | 14 | 127.00 | 225.17 | 323.35 |

*All weights are calculated per 5ft section of pipe.

## Table 2. Cont.

| Diameter | Gage | Weight 0% Fill | Weight 25% Fill | Weight 50% Fill |
|---|---|---|---|---|
| [in] | [ga] | [lbs] | [lbs] | [lbs] |
| 26 | 16 | 98.56 | 213.78 | 329.00 |
| | 14 | 145.07 | 260.29 | 375.51 |
| 28 | 16 | 118.00 | 251.63 | 385.25 |
| | 14 | 156.16 | 289.79 | 423.41 |
| 30 | 16 | 137.05 | 290.45 | 443.85 |
| | 14 | 167.74 | 321.14 | 474.54 |
| 32 | 16 | 145.94 | 320.47 | 495.01 |
| | 14 | 178.82 | 353.35 | 527.89 |
| 34 | 16 | 154.83 | 351.86 | 548.89 |
| | 14 | 189.91 | 386.94 | 583.97 |
| 36 | 16 | 162.76 | 383.65 | 604.55 |
| | 14 | 200.49 | 421.38 | 642.28 |
| 38 | 16 | 173.47 | 419.59 | 665.71 |
| | 14 | 212.07 | 458.19 | 704.31 |
| 40 | 16 | 182.81 | 455.52 | 728.23 |
| | 14 | 223.15 | 495.86 | 768.57 |

*All weights are calculated per 5ft section of pipe.

*Pipe weight calculations based on a material density of 25 lb/ft$^3$.

*All flanged pipe is van stoned.

## Table 3. Ducting Allowable Point Load

| Diameter | Gage | | | |
|---|---|---|---|---|
| [in] | 22 | 20 | 16 | 14 |
| 3 | 0.3 | | | |
| 4 | 0.3 | | | |
| 5 | 0.3 | | | |
| 6 | 0.3 | | | |
| 7 | 0.3 | | | |
| 8 | 0.3 | | | 2.2 |
| 9 | 0.3 | | | 2 |
| 10 | 0.3 | | | 2 |
| 11 | 0.3 | | | 2 |
| 12 | 0.3 | | | 2 |
| 13 | | 0.8 | | 1.8 |
| 14 | | 0.8 | | 1.8 |
| 15 | | 0.8 | | 1.8 |
| 16 | | 0.8 | | 1.8 |
| 17 | | 0.8 | | 1.8 |
| 18 | | 0.8 | | 1.8 |
| 19 | | 0.8 | | 1.8 |
| 20 | | 0.8 | | 1.8 |
| 21 | | 0.8 | | 1.8 |
| 22 | | 0.8 | | 1.8 |
| 23 | | 0.8 | | 1.7 |
| 24 | | 0.8 | | 1.7 |
| 26 | | | 1 | 1.7 |
| 28 | | | 1 | 1.6 |
| 30 | | | 1 | 1.6 |
| 32 | | | 1 | 1.6 |
| 34 | | | 1 | 1.6 |
| 36 | | | 1 | 1.6 |
| 38 | | | 0.9 | 1.6 |
| 40 | | | 0.9 | 1.6 |

*Note.* Reproduced from *Round Industrial Duct Construction Standards, (3rd ed.). Table 13-1. Maximum Allowable Load at Points of Support – Carbon and Galvanized Steel Ducts.*

*Loads are in Kips and good to 400°F for galvanized steels. 1 Kip = 1,000 lbs.

*Loads have a multiplier of 1.5 if using support straps and the straps are installed no further than 6" from the angle ring.

Design standards are based upon the following two reference manuals:

- SMACNA, (2013). *Round Industrial Duct Construction Standards,* (3rd ed.).
- ACGIH, (2019). *Industrial Ventilation: A Manual of Recommended Practice for Design* (30th ed.).

Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 (855) 925-1609
FAX: +1 (905) 366-2206



TOLERANCE
ALL DIMS IN INCHES
.X ±.063
.XX ±.031
.XXX ±.015
ANGULAR ±1°
UNLESS OTHERWISE SPECIFIED

Material:

| | NAME | DATE |
|---|---|---|
| DRAWN: | M. Davidson | 2/27/2020 |
| CHECKED: | R. Williamson | |

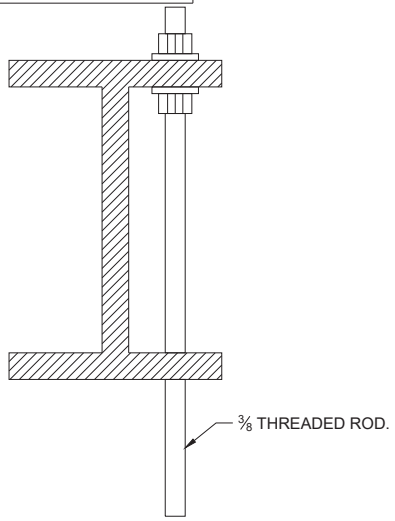
Rev: A
Scale: NTS
Sheet #: 2 of 8
Size: A

Title: Pipe Weights

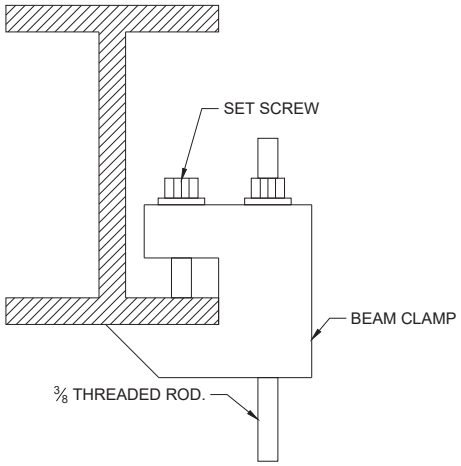
Part Number:

Drawing Number: DUCT_GUIDELINES

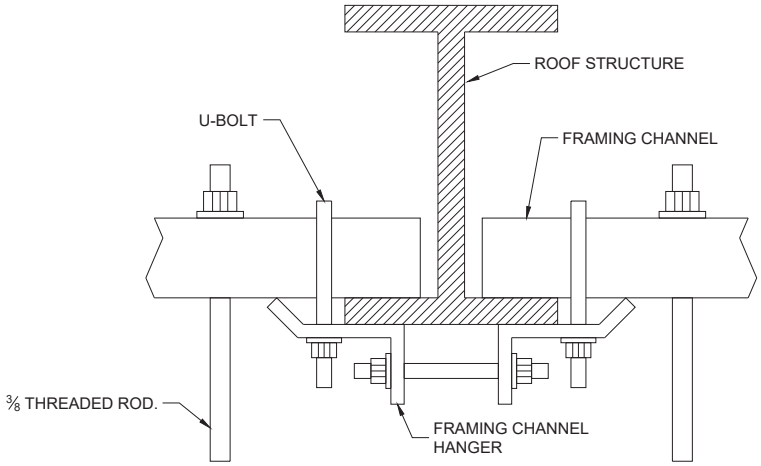
*IF IN DOUBT ASK*



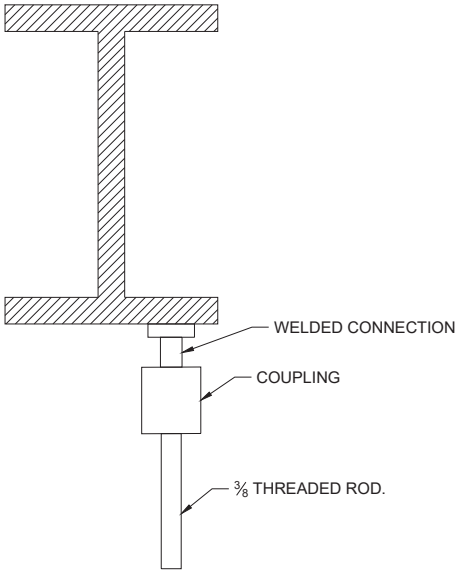

Direct Threaded Rod Method



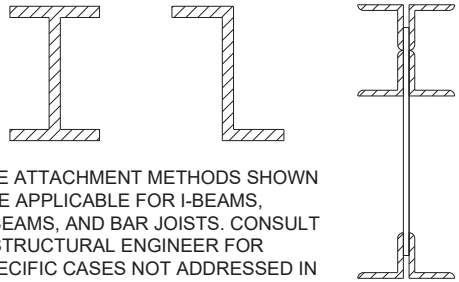

Beam Clamp Method




Framing Channel Method




Welding Method



THE ATTACHMENT METHODS SHOWN ARE APPLICABLE FOR I-BEAMS, Z-BEAMS, AND BAR JOISTS. CONSULT A STRUCTURAL ENGINEER FOR SPECIFIC CASES NOT ADDRESSED IN THIS DOCUMENT.

FIGURES ON THIS PAGE REPRESENT SOME POSSIBLE ROOF ATTACHMENT METHODS AND SHOULD NOT BE CONSIDERED A COMPLETE SELECTION. IT IS THE INSTALLER'S RESPONSIBILITY TO DETERMINE THE MOST APPROPRIATE METHOD BASED ON EACH INSTALLATION SITE.

ALL HARDWARE SHOULD BE SAE GRADE 5 MINIMUM.

IT IS THE CUSTOMER'S RESPONSIBILITY TO ENSURE THAT THE ROOF STRUCTURE IS CAPABLE OF SUPPORTING THE WEIGHT OF THE DUST COLLECTION SYSTEM.

Design standards are based upon the following two reference manuals:

- SMACNA, (2013). *Round Industrial Duct Construction Standards,* (3rd ed.).
- ACGIH, (2019). *Industrial Ventilation: A Manual of Recommended Practice for Design* (30th ed.).

Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 (855) 925-1609
FAX: +1 (905) 366-2206



TOLERANCE
ALL DIMS IN INCHES
.X ±.063
.XX ±.031
.XXX ±.015
ANGULAR ±1°
UNLESS OTHERWISE SPECIFIED

Material:

| | NAME | DATE |
|---|---|---|
| DRAWN: | M. Davidson | 2/27/2020 |
| CHECKED: | R. Williamson | |

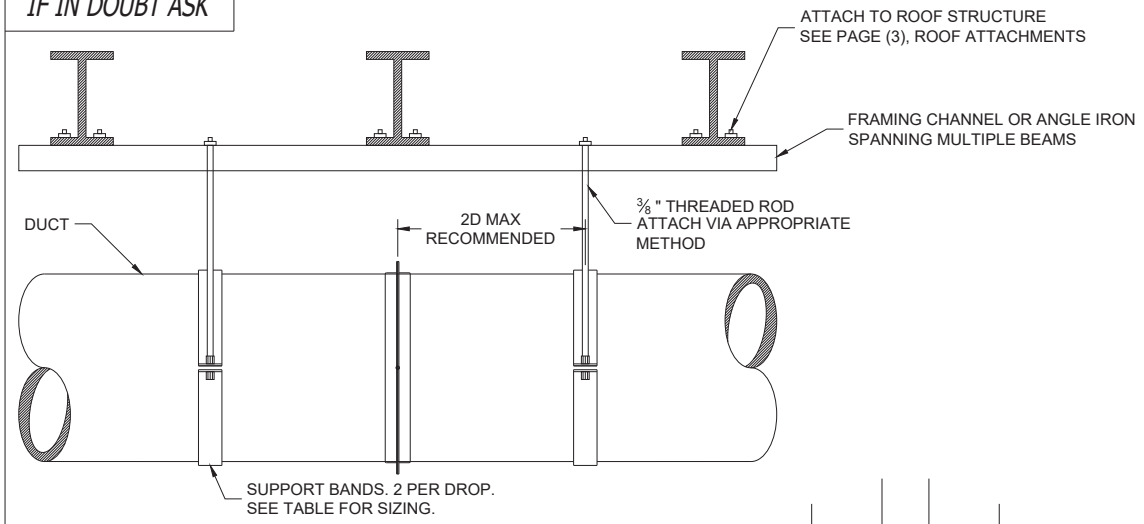
Rev: A
Scale: NTS
Sheet #: 3 of 8
Size: A

Title: Roof Attachments

Part Number:

Drawing Number: DUCT_GUIDELINES

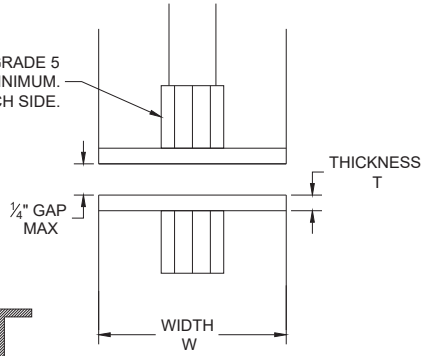
IF IN DOUBT ASK

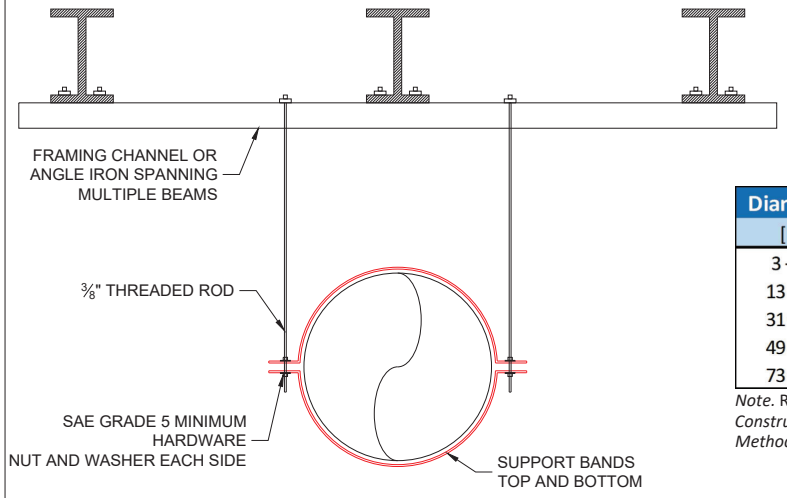



SUPPORT BANDS SHOULD BE USED ON ALL DUCT 26" DIAMETER AND LARGER

*⅜" THREADED ROD HAS A MAXIMUM LOAD OF 610 lbs.

*ONLY ONE UNSUPPORTED, UNWELDED VAN STONE DUCT SECTION CAN OCCUR BETWEEN SUPPORTS




## Table 4. Strap Hangers

| Diameter | Width – W | Thickness – T |
|---|---|---|
| [in] | [in] | [in] |
| 3 – 12 | 1 – 1/2 | 1/8 |
| 13 – 30 | 2 | 3/16 |
| 31 – 48 | 2 – 1/2 | 1/4 |
| 49 – 72 | 4 | 3/8 |
| 73 – 96 | 6 | 1/2 |

*Note.* Reproduced from *Round Industrial Duct Construction Standards, (3rd ed.). Figure 13-4. Methods for Hanging Round Industrial Duct.*

## Table 5. Framing Channel Allowable Load

| Column K = 1.0 | $1\frac{5}{8}$" x $1\frac{5}{8}$" x 12ga , I = 0.185 in⁴ , $S_f$ = 0.2042 in³ , Weight = 1.90 lb/ft | | | | |
|---|---|---|---|---|---|
| | Loads Resulting in a Maximum Bending Stress of 25 Ksi | | | | |
| | Center Concentrated Load | | Uniformly Distributed Load | |
| Unbraced Beam Span or Column Height | Concentric Load | Load | Deflection | Load | Deflection |
| [in] | [lbs] | [lbs] | [lbs] | [in] | [lbs] |
| 12 | 3952 | 1701 | 0.01 | 3401 | 0.01 |
| 24 | 3554 | 849 | 0.04 | 1698 | 0.06 |
| 36 | 2962 | 564 | 0.10 | 1129 | 0.13 |
| 48 | 2251 | 422 | 0.18 | 843 | 0.22 |
| 60 | 1603 | 336 | 0.28 | 671 | 0.35 |
| 72 | 1233 | 278 | 0.40 | 556 | 0.49 |
| 84 | 1003 | 236 | 0.53 | 473 | 0.67 |
| 96 | 847 | 205 | 0.69 | 410 | 0.87 |
| 108 | 734 | 181 | 0.87 | 361 | 1.09 |
| 120 | 548 | 161 | 1.06 | 321 | 1.32 |

*Note.* Reproduced from *Round Industrial Duct Construction Standards, (3rd ed.). Table 13-6.1. Framing Channel – Load Tables.*

## Table 6. Angle Iron Allowable Load

| Column | 2" x 2" x $\frac{1}{4}$" , I = 0.348 in⁴ , $S_f$ = 0.247 in³ , Weight = 3.190 lb/ft | | | |
|---|---|---|---|---|
| | Loads Resulting in a Maximum Bending Stress of 15 Ksi | | | |
| | Center Concentrated Load | | Uniformly Distributed Load | |
| Unbraced Beam Span or Column Height | Concentric Load | Load | Deflection | Load | Deflection |
| [in] | [lbs] | [lbs] | [lbs] | [in] | [lbs] |
| 12 | | 1233 | – | 2466 | 0.01 |
| 24 | | 614 | 0.02 | 1228 | 0.02 |
| 36 | | 406 | 0.04 | 813 | 0.05 |
| 48 | Angle not | 302 | 0.07 | 604 | 0.09 |
| 60 | efficient under | 239 | 0.11 | 480 | 0.14 |
| 72 | compression | 196 | 0.16 | 390 | 0.19 |
| 84 | loading | 165 | 0.22 | 329 | 0.27 |
| 96 | | 142 | 0.28 | 280 | 0.35 |
| 108 | | 122 | 0.36 | 243 | 0.44 |
| 120 | | 107 | 0.45 | 215 | 0.54 |

*Note.* Reproduced from *Round Industrial Duct Construction Standards, (3rd ed.). Table 13-7.1. Angle Tables.*

Design standards are based upon the following two reference manuals:

- SMACNA, (2013). *Round Industrial Duct Construction Standards,* (3rd ed.).
- ACGIH, (2019). *Industrial Ventilation: A Manual of Recommended Practice for Design* (30th ed.).

Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 (855) 925-1609
FAX: +1 (905) 366-2206



TOLERANCE
ALL DIMS IN INCHES
.X ±.063
.XX ±.031
.XXX ±.015
ANGULAR ±1°
UNLESS OTHERWISE SPECIFIED

Material:

| | NAME | DATE |
|---|---|---|
| DRAWN: | M. Davidson | 2/27/2020 |
| CHECKED: | R. Williamson | |

Rev: A
Scale: NTS
Sheet #: 4 of 8
Size: A

Title: Strap Hangers

Part Number:

Drawing Number: DUCT_GUIDELINES

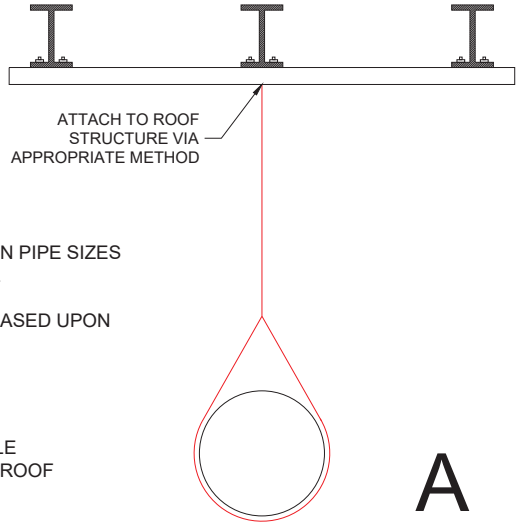
*IF IN DOUBT ASK*

Table 7.
Gripple Safe Working Load

| Gripple Number | Allowable Load |
|---|---|
| [–] | [lbs] |
| #1 | 0 – 25 |
| #2 | 25 – 100 |
| #3 | 100 – 200 |
| #4 | 200 – 495 |
| #5 | 495 – 715 |

Table 8.
Gripple Selection by Pipe Diameter

| Diameter | Spacing | |
|---|---|---|
| [in] | 10ft | 15ft |
| 3 – 12 | #3 | #4 |
| 13 – 21 | #4 | #5 |
| 22 – 24 | #5 | |

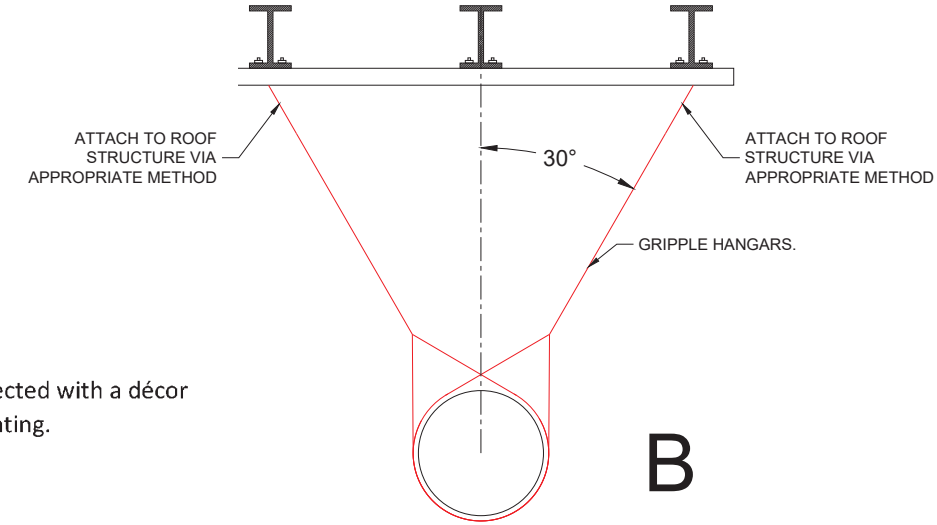



*GRIPPLES SHOULD ONLY BE USED ON PIPE SIZES UP TO AND INCLUDING 24" DIAMETER.

*GRIPPLE SPACING IS DETERMINED BASED UPON PIPE WEIGHT AND GRIPPLE SIZE.

FOR STYLE "A", USE A SINGLE GRIPPLE SUSPENDED VERTICALLY FROM THE ROOF STRUCTURE.

FOR STYLE "B", USE TWO GRIPPLES HUNG AT AN ANGLE, NOT TO EXCEED 30° FROM VERTICAL.




Gripple Hanger – Do's

- Ensure that the cable protrudes at least 3 inches from the Gripple housing.
- Use Gripple hangers for suspending static loads only.
- Use the hanger within its stated load range.
- Check that the self-locking fastener is fully engaged.
- Ensure all hangers are evenly loaded.
- Keep the hanger components clean.
- Follow the manufacturer's recommendations.
- Consider the effect of an angle, or forming in-line joins, has on the Safe Working Load.
- Follow health and safety guidelines and best practice recommendations in the workplace.
- Ensure appropriate PPE is worn when handling cable.

Gripple Hanger – Dont's

- Exceed the product's Safe Working Load.
- Use the hanger for lifting.
- Use the hanger for moving services.
- Splice together two Gripple hanger kits, or any other joining device.
- Walk on any suspended service.
- Use the self-locking fasteners on coated wire of any kind.
- Apply paint to the Gripple fastener. Ensure that the Gripple is in its final position and protected with a décor cover prior to applying any paint to the cable assembly. Do not move the gripple after painting.
- Apply lubricants or other coatings to the Gripple or cable.
- Use standard hangers in a chlorinated or humid atmosphere.
- Exceed an angle of 30° from vertical.
- Attempt to use the setting key when the suspension is under load.
- Reuse Gripple hangers; they are designed for permanent installations.

Design standards are based upon the following two reference manuals:

- SMACNA, (2013). *Round Industrial Duct Construction Standards,* (3rd ed.).
- ACGIH, (2019). *Industrial Ventilation: A Manual of Recommended Practice for Design* (30th ed.).


Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 (855) 925-1609
FAX: +1 (905) 366-2206




TOLERANCE
ALL DIMS IN INCHES
.X ±.063
.XX ±.031
.XXX ±.015
ANGULAR ±1°
UNLESS OTHERWISE SPECIFIED

Material:

| | NAME | DATE |
|---|---|---|
| DRAWN: | M. Davidson | 2/27/2020 |
| CHECKED: | R. Williamson | |

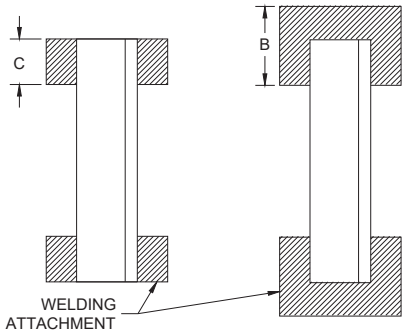
Rev: A
Scale: NTS
Sheet #: 5 of 8
Size: A

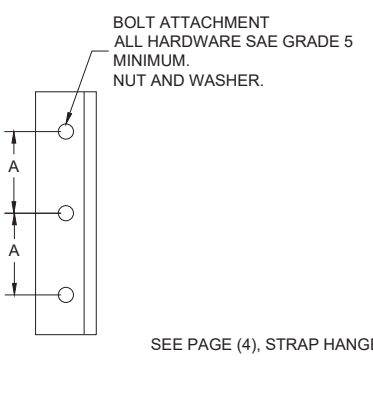
Title: Gripple Hangers

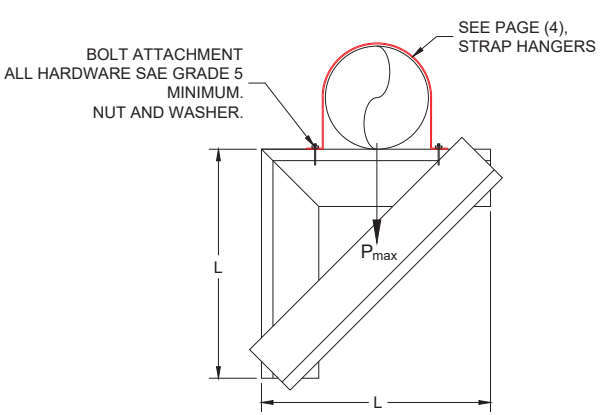
Part Number:

Drawing Number: DUCT_GUIDELINES

IF IN DOUBT ASK




## Table 9. Knee Brace Hanger

| Angle Size | L | $P_{max}$ | Bolts | | | Welding | |
|---|---|---|---|---|---|---|---|
| | | | Number | Diameter | A | B | C |
| [in] | [in] | [Kips] | – | [in] | [in] | [in] | [in] |
| 2 x 2 x 1/4 | 8 | 1.3 | 3 | 1/2 | 2.5 | | |
| 2 x 2 x 1/4 | 12 | 1.5 | 3 | 1/2 | 4.0 | | |
| 2 x 2 x 1/4 | 18 | 1.7 | 4 | 1/2 | 4.5 | | |
| 2 x 2 x 1/4 | 24 | 1.7 | 4 | 1/2 | 6.5 | | |
| 3 x 3 x 1/4 | 12 | 2 | 3 | 5/8 | 4.0 | | |
| 3 x 3 x 1/4 | 18 | 2 | 3 | 5/8 | 7.0 | | |
| 3 x 3 x 1/4 | 24 | 2 | 3 | 5/8 | 9.5 | | |
| 3 x 3 x 1/4 | 30 | 2 | 4 | 5/8 | 8.0 | | |
| 3 x 3 x 1/4 | 36 | 2 | 4 | 5/8 | 11.0 | | 2 |
| 3 x 3 x 1/4 | 42 | 2 | 5 | 5/8 | 9.0 | | |
| 4 x 4 x 3/8 | 12 | 4 | 3 | 7/8 | 4.0 | | |
| 4 x 4 x 3/8 | 18 | 4 | 4 | 7/8 | 3.5 | | |
| 4 x 4 x 3/8 | 24 | 4 | 4 | 7/8 | 6.0 | | |
| 4 x 4 x 3/8 | 30 | 4 | 4 | 7/8 | 8.0 | 1 | |
| 4 x 4 x 3/8 | 36 | 4 | 4 | 7/8 | 10.0 | | |
| 4 x 4 x 3/8 | 42 | 4 | 5 | 7/8 | 9.0 | | |
| 4 x 4 x 3/8 | 48 | 4 | 5 | 7/8 | 10.0 | | |
| 5 x 5 x 1/2 | 12 | 7 | 4 | 1 | 2.5 | | |
| 5 x 5 x 1/2 | 18 | 7 | 4 | 1 | 4.0 | | |
| 5 x 5 x 1/2 | 24 | 7 | 4 | 1 | 6.0 | | |
| 5 x 5 x 1/2 | 30 | 7 | 4 | 1 | 8.0 | | |
| 5 x 5 x 1/2 | 36 | 7 | 5 | 1 | 7.5 | | 3 |
| 5 x 5 x 1/2 | 42 | 7 | 5 | 1 | 9.0 | | |
| 5 x 5 x 1/2 | 48 | 7 | 5 | 1 | 10.5 | | |
| 5 x 5 x 1/2 | 54 | 7 | 5 | 1 | 12.0 | | |
| 5 x 5 x 1/2 | 60 | 7 | 6 | 1 | 11.0 | | |

*Note.* Reproduced from *Round Industrial Duct Construction Standards, (3rd ed.). Table 13-20. Knee Brace Hanger Capacity*

## Table 10. Knee Brace Support

| Angle Size | L | $P_{max}$ | Bolts | | | Welding | |
|---|---|---|---|---|---|---|---|
| | | | Number | Diameter | A | B | C |
| [in] | [in] | [Kips] | – | [in] | [in] | [in] | [in] |
| 2 x 2 x 1/4 | 8 | 1.9 | 3 | 1/2 | 2.5 | | |
| 2 x 2 x 1/4 | 12 | 1.3 | 3 | 3/8 | 4.5 | | |
| 2 x 2 x 1/4 | 18 | 0.9 | 3 | 3/8 | 7.0 | | |
| 2-1/2 x 2-1/2 x 1/4 | 12 | 2 | 3 | 1/2 | 4.5 | | |
| 2-1/2 x 2-1/2 x 1/4 | 14 | 1.3 | 3 | 1/2 | 7.0 | | |
| 3 x 3 x 1/4 | 18 | 1.9 | 3 | 1/2 | 7.0 | | |
| 3 x 3 x 1/4 | 24 | 1.5 | 3 | 1/2 | 10.0 | | 2 |
| 3-1/2 x 3-1/2 x 1/4 | 18 | 2.6 | 4 | 1/2 | 4.5 | | |
| 3-1/2 x 3-1/2 x 1/4 | 24 | 2 | 4 | 1/2 | 6.5 | | |
| 4 x 4 x 3/8 | 18 | 5 | 4 | 5/8 | 4.5 | | |
| 4 x 4 x 3/8 | 24 | 3.8 | 4 | 5/8 | 6.5 | | |
| 4 x 4 x 3/8 | 30 | 3 | 4 | 1/2 | 8.5 | 1 | |
| 4 x 4 x 3/8 | 36 | 2.5 | 4 | 1/2 | 10.5 | | |
| 5 x 5 x 1/2 | 24 | 8 | 5 | 3/4 | 5.0 | | |
| 5 x 5 x 1/2 | 30 | 6.4 | 5 | 3/4 | 6.5 | | |
| 5 x 5 x 1/2 | 36 | 5.3 | 5 | 5/8 | 8.0 | | |
| 5 x 5 x 1/2 | 42 | 4.6 | 5 | 5/8 | 9.5 | | |
| 6 x 6 x 1/2 | 30 | 9.2 | 6 | 3/4 | 5.0 | | 3 |
| 6 x 6 x 1/2 | 36 | 7.7 | 6 | 3/4 | 6.0 | | |
| 6 x 6 x 1/2 | 42 | 6.7 | 6 | 5/8 | 7.5 | | |
| 6 x 6 x 1/2 | 48 | 5.8 | 6 | 5/8 | 8.5 | | |
| 6 x 6 x 1/2 | 54 | 5.1 | 6 | 5/8 | 9.5 | | |
| 6 x 6 x 1/2 | 60 | 4.6 | 6 | 5/8 | 11.0 | | |

*Note.* Reproduced from *Round Industrial Duct Construction Standards, (3rd ed.). Table 13-21. Knee Brace Support Capacity*

Design standards are based upon the following two reference manuals:

- SMACNA, (2013). *Round Industrial Duct Construction Standards,* (3rd ed.).
- ACGIH, (2019). *Industrial Ventilation: A Manual of Recommended Practice for Design* (30th ed.).

Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 (855) 925-1609
FAX: +1 (905) 366-2206



TOLERANCE
ALL DIMS IN INCHES
.X ±.063
.XX ±.031
.XXX ±.015
ANGULAR ±1°
UNLESS OTHERWISE SPECIFIED

Material:

| | NAME | DATE |
|---|---|---|
| DRAWN: | M. Davidson | 2/27/2020 |
| CHECKED: | R. Williamson | |

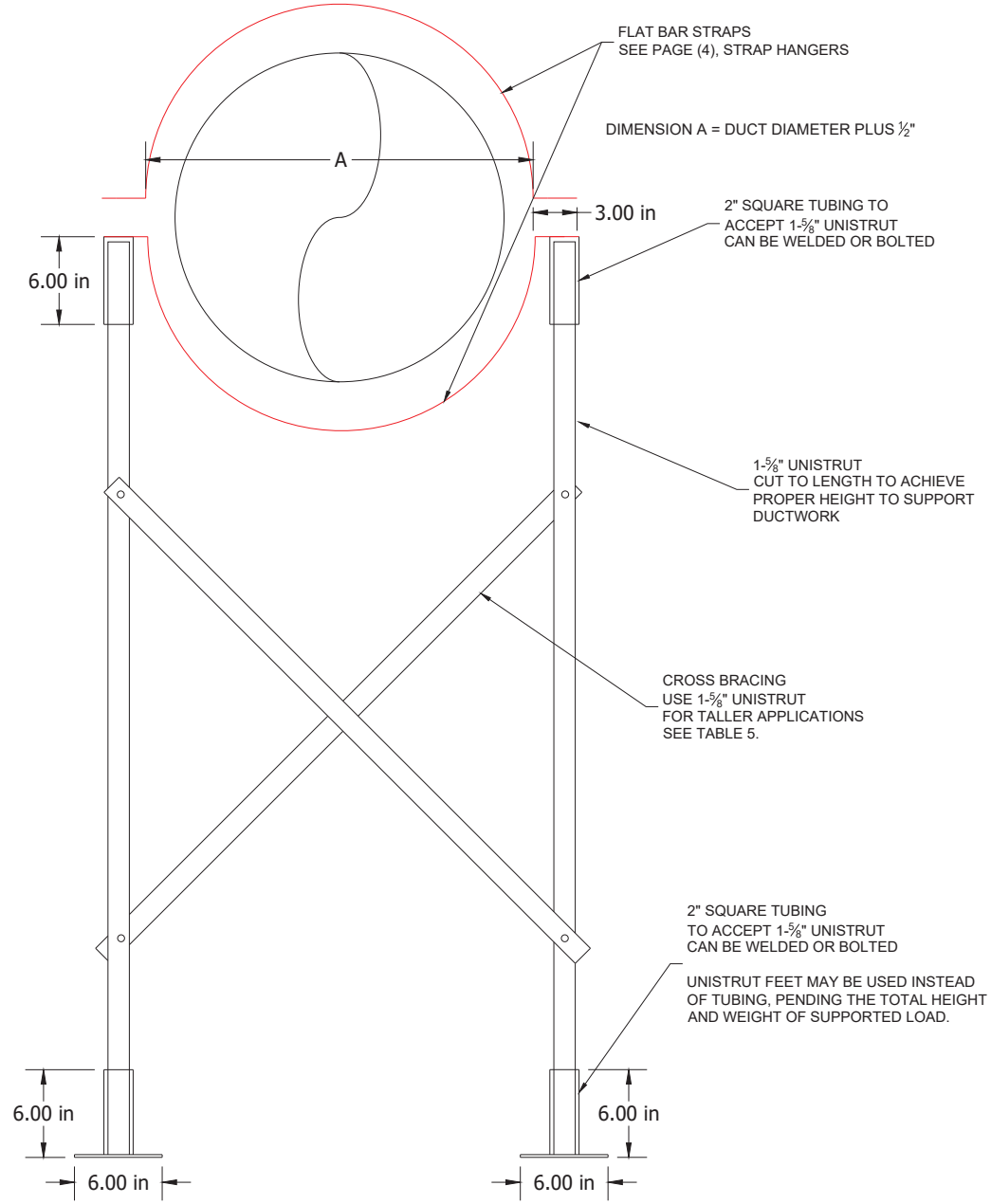
Rev: A
Scale: NTS
Sheet #: 6 of 8
Size: A

Title: Knee Braces

Part Number:

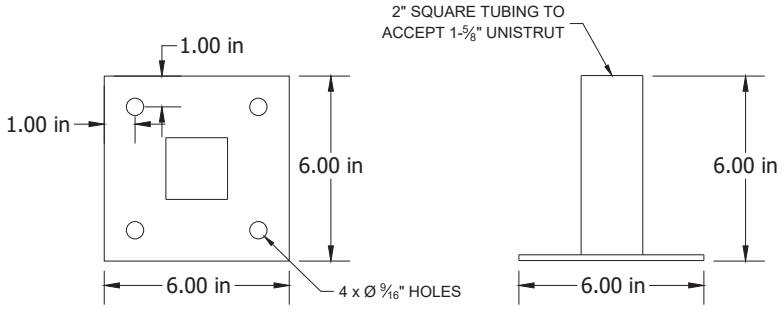
Drawing Number: DUCT_GUIDELINES

IF IN DOUBT ASK




## DUCT STAND FEET

MATERIAL: BASE 3/16" THICK BLACK IRON
PAINT BLACK




PLAN VIEW SIDE VIEW

SCALE 2:1

### Table 5. Framing Channel Allowable Load

| | Column K = 1.0 | 1 5/8" x 1 5/8" x 12ga , I = 0.185 in⁴ , $S_t$ = 0.2042 in³ , Weight = 1.90 lb/ft | | | |
|---|---|---|---|---|---|
| | | Loads Resulting in a Maximum Bending Stress of 25 Ksi | | | |
| | | Center Concentrated Load | | Uniformly Distributed Load | |
| Unbraced Beam Span or Column Height | Concentric Load | Load | Deflection | Load | Deflection |
| [in] | [lbs] | [lbs] | [lbs] | [in] | [lbs] |
| 12 | 3952 | 1701 | 0.01 | 3401 | 0.01 |
| 24 | 3554 | 849 | 0.04 | 1698 | 0.06 |
| 36 | 2962 | 564 | 0.10 | 1129 | 0.13 |
| 48 | 2251 | 422 | 0.18 | 843 | 0.22 |
| 60 | 1603 | 336 | 0.28 | 671 | 0.35 |
| 72 | 1233 | 278 | 0.40 | 556 | 0.49 |
| 84 | 1003 | 236 | 0.53 | 473 | 0.67 |
| 96 | 847 | 205 | 0.69 | 410 | 0.87 |
| 108 | 734 | 181 | 0.87 | 361 | 1.09 |
| 120 | 548 | 161 | 1.06 | 321 | 1.32 |

*Note.* Reproduced from *Round Industrial Duct Construction Standards, (3rd ed.). Table 13-6.1. Framing Channel – Load Tables.*

Design standards are based upon the following two reference manuals:

- SMACNA, (2013). *Round Industrial Duct Construction Standards,* (3rd ed.).
- ACGIH, (2019). *Industrial Ventilation: A Manual of Recommended Practice for Design* (30th ed.).


Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 (855) 925-1609
FAX: +1 (905) 366-2206




TOLERANCE
ALL DIMS IN INCHES
.X ±.063
.XX ±.031
.XXX ±.015
ANGULAR ±1°
UNLESS OTHERWISE SPECIFIED

Material:

| | NAME | DATE |
|---|---|---|
| DRAWN: | M. Davidson | 2/27/2020 |
| CHECKED: | R. Williamson | |

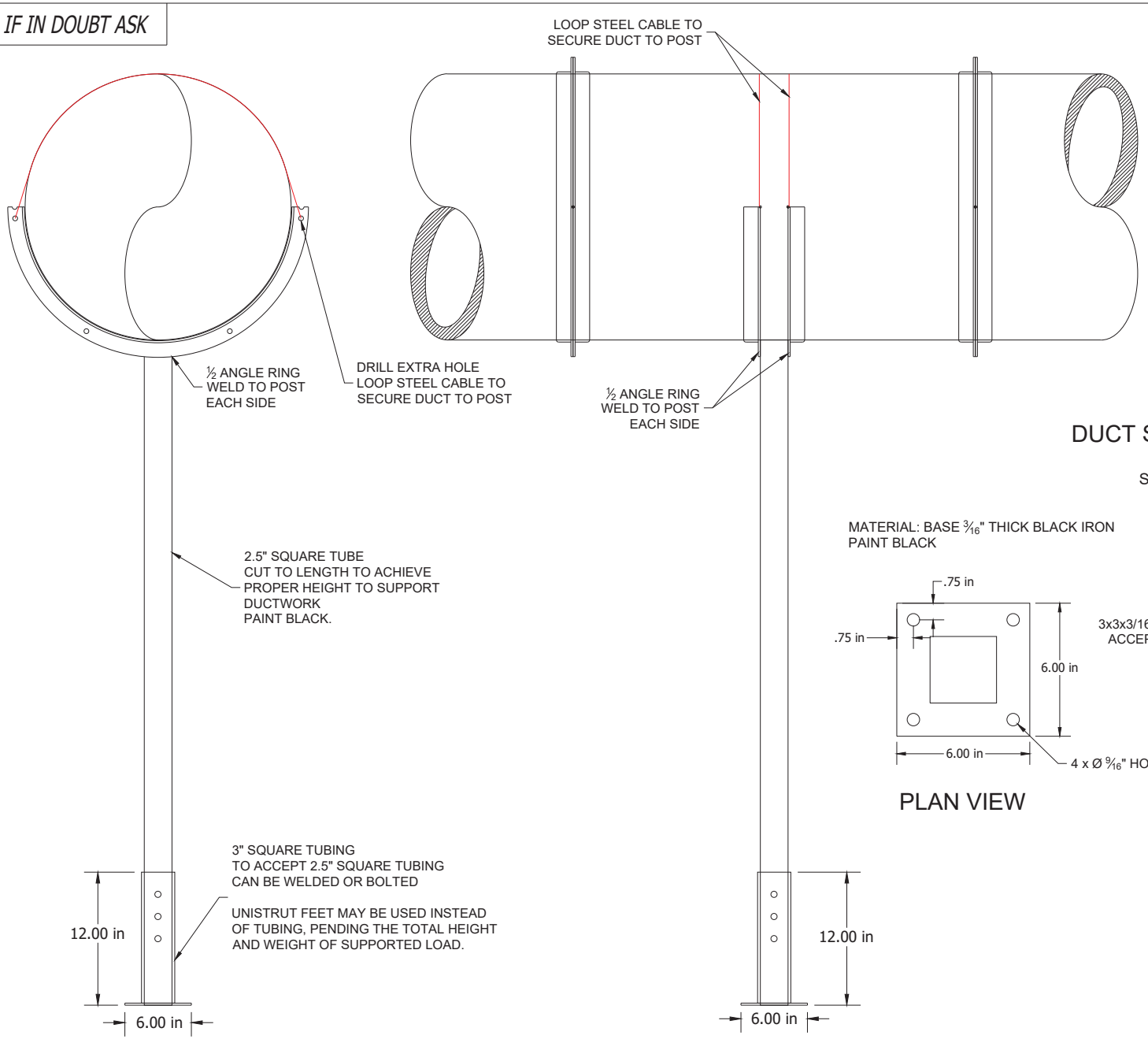
Rev: A
Scale: NTS
Sheet #: 7 of 8
Size: A

Title: Exterior Support Stands

Part Number:

Drawing Number: DUCT_GUIDELINES

IF IN DOUBT ASK



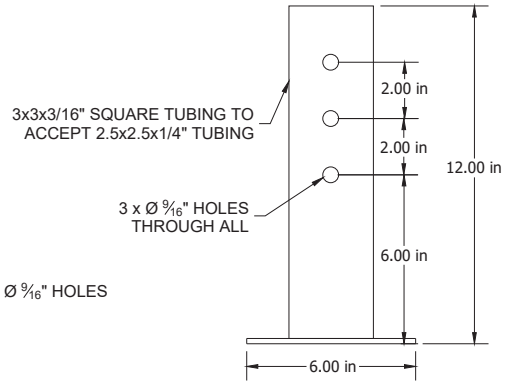

## DUCT STAND FEET

SCALE 2:1

MATERIAL: BASE 3/16" THICK BLACK IRON
PAINT BLACK




PLAN VIEW




SIDE VIEW


Nederman
5865 McLaughlin Road
Mississauga, ON L5R 1B8
TEL: +1 (855) 925-1609
FAX: +1 (905) 366-2206




TOLERANCE
ALL DIMS IN INCHES
.X ±.063
.XX ±.031
.XXX ±.015
ANGULAR ±1°
UNLESS OTHERWISE SPECIFIED

Material:

| | NAME | DATE |
|---|---|---|
| DRAWN: | M. Davidson | 2/27/2020 |
| CHECKED: | R. Williamson | |

Rev: A
Scale: NTS
Sheet #: 8 of 8
Size: A

Title: Exterior Support Posts

Part Number:

Drawing Number: DUCT_GUIDELINES